STEEL

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For forty-eight years—IRON TRADE REVIEW

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Published by
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PENTON BUILDING
CLEVELAND, O.

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Member Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers Association.

Published every Monday. Subscription in the United States, Cuba and Mexico, one year $4, two years $6; in Canada one year $6.60, two years $11.20; in Great Britain and European countries, one year £2.

Entered as second class matter at postoffice at Cleveland under the Act of March 3, 1879.

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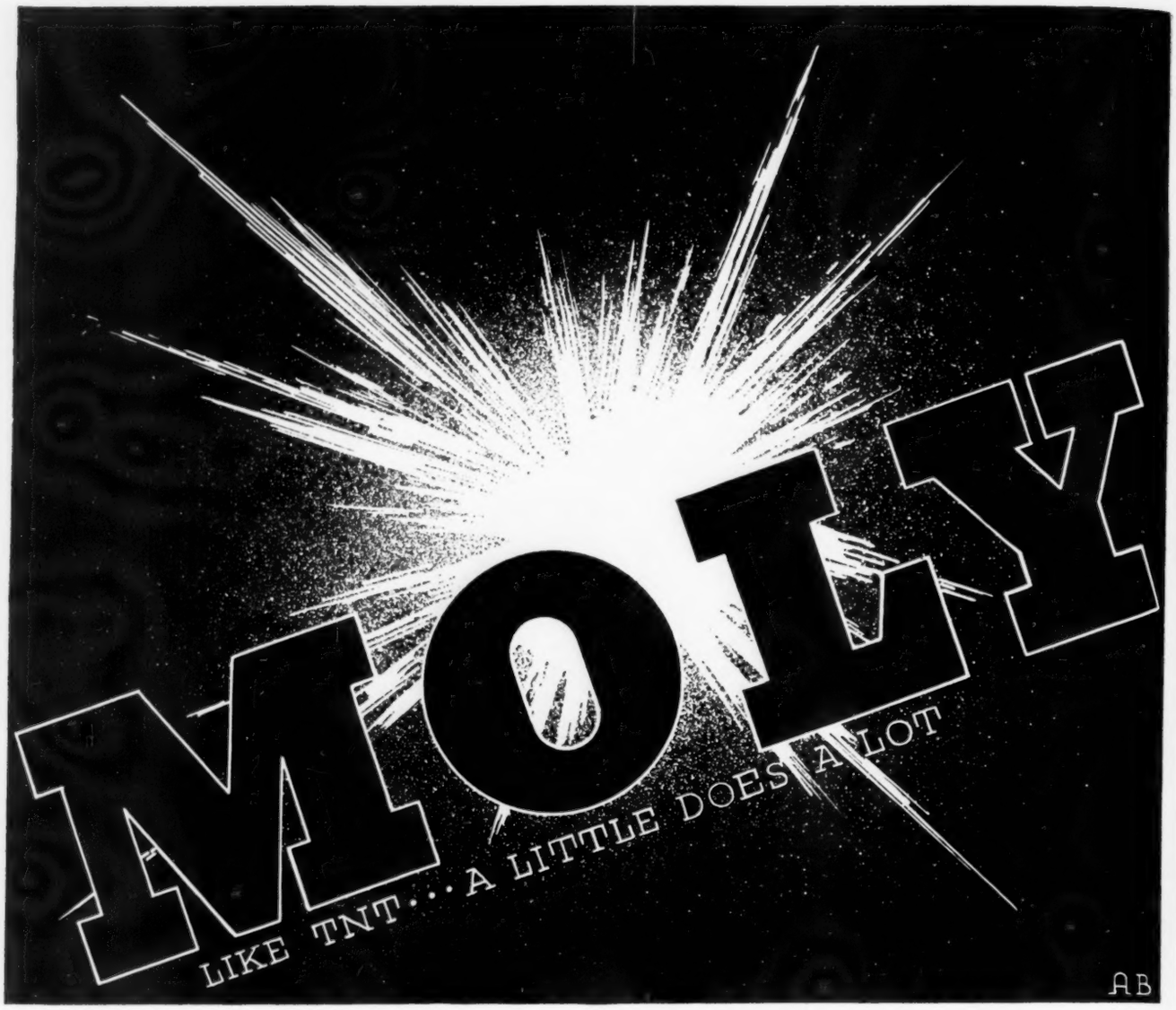

WHETHER it be toward the application of strength or the resistance to shock or wear, any added element which justifies its cost is usually welcome. "Moly" in iron or steel does more than that.

Example: A small amount of Molybdenum, when added to cast iron, will increase its wear resistance to an extent that far outweighs the added cost. The following comparison of wear, as measured on the Amsler Machine, brings out this effect:

	Loss in weight per sq. cm. *after* 105,000 *cycles*
Plain Iron	7.3 grams
Molybdenum Iron (1% Mo.) . .	1.0 "

By the same token, Moly increases the strength (tensile and creep) of iron or steel. It reduces temper embrittlement — increases toughness, without loss of hardness. It actually enhances the characteristics of other alloys. Yet it makes for easier machinability, forging and welding. Paradoxical? It seems so. But Moly qualities are no longer theories. Instances without number have proved them.

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As the Editor Views the News

BECAUSE of the political dynamite involved, some industrial executives may be reluctant to identify themselves openly with the American Liberty league, which was incorporated last Wednesday. However, an overwhelming majority will applaud and support its stated objectives:

> "To defend and uphold the constitution of the United States, and gather and disseminate information that (1) will teach the necessity of respect for the rights of persons and property as fundamental to every successful form of government, and (2) to teach the duty of government, to encourage and protect group initiative and enterprise, to foster the right to work, earn, save and acquire property, and to preserve the ownership and lawful use of property when acquired."

• • •

Reason vs. Fanaticism

These principles accord so closely with the plea for the preservation of industry, voiced frequently in this column, that we hope they will be impressed indelibly upon the mind of every voter in the nation. Whether this is accomplished through the American Liberty league or through other agencies is immaterial. The main point is that powerful, non-political forces should be set in motion immediately to counteract the harmful, destructive advice now being furnished to the President by certain groups, to which thus far he has lent a receptive ear. The voice of reason must be made audible above the din of fanaticism.

• • •

For the Ear of F. D. R.

Only by tremendous pressure for sane action, emanating from the rank and file of American industry and agriculture, rather than from Wall street and large corporations, can the President be diverted from his present path. This strong corrective influence is needed to acquaint him with the fact that farmers by the tens of thousands—their initiative destroyed by AAA—now are "playing Uncle Sam for a sucker"; that hundreds of thousands of honest citizens—confused by inequitable relief measures and conflicting labor policies—have discarded thrift and ambition for greed to get their "share" of public money; and that industrial executives, witnessing these signs of decay, fear the consequences. Again it is needed to convince the President that every voice of protest does not originate in Wall street.

• • •

Oil and Alloy Steel

Quite by accident the account of the rise of alloy steel (p. 25) appears just as Titusville, Pa., is celebrating the seventy-fifth anniversary of the striking of oil by Drake. The two are connected by an interesting chain of circumstances. Drake's discovery, affording an abundance of a new cheap fuel, stimulated development of the internal combustion motor, which in turn paved the way for the automobile. The struggle for mechanical perfection in motor cars provided the early incentive for alloy steel. For a quarter-century the automobile industry has been taking 75 per cent or more of the alloy steel produced. Today the petroleum refining industry also is an important user of this material. Thus Drake's "folly" exercised a two-way influence upon the development of alloy steel.

• • •

Curtains of Filtered Air

A hint as to how air conditioning may fit into many industrial operations is afforded by a recent installation in an automobile body plant. Curtains of filtered air (p. 37) are thrown around each spray booth, eliminating dirt, improving working conditions and enabling the company to turn out bodies with a finish superior in appearance and quality to that obtainable under ordinary conditions. . . . A mid-western wire maker has developed a new method of galvanizing, known as the "flame sealed" process. After the wire is annealed, cleaned and coated (p. 40), it passes through a coating regulator, which governs the amount of zinc remaining on the wire, and then is subjected to the action of a controlled flame, which smooths and evenly distributes the coating, thereby sealing pin holes or voids.

E. L. Shaner

Republic, McKinney, Truscon Merger Being Completed

FORMAL announcement of the terms and details of a combination of the Republic Steel Corp., Corrigan, McKinney Steel Co. and Truscon Steel Co. is expected to be made Monday or Tuesday of this week. Negotiations between Republic and Corrigan-McKinney, in process since early July, culminated late last week in a definite agreement, which is expected to be approved by directors of both companies Monday. Truscon, a fabricating and not a steel producing interest, entered the merger picture only a few days ago, but appears to be definitely included.

It is understood that Corrigan-McKinney will be completely absorbed by the Republic organization. Truscon, however, probably will be operated as a separate organization under Republic's control.

While nothing official was made public last week, it was intimated that in addition to greatly strengthening the position of Republic in the trade, the proposed program would have a far-reaching favorable effect from the standpoint of Republic's stockholders because of the proposed changes in the financial setup of the organization.

Republic's position as third largest producer of steel—second largest independent—is not changed by the merger. To Republic's annual ingot capacity of 5,013,000 tons the Corrigan, McKinney company brings about 1,000,000 tons of capacity.

Republic Third Largest

Republic thus will have an annual rating of about 6,000,000 tons of steel ingots, compared with 27,341,900 tons for the United States Steel Corp. and 9,360,000 for the Bethlehem Steel Co. The next largest company after Republic is the Jones & Laughlin Steel Corp., 3,660,000 tons.

Control of the Corrigan, McKinney company has been lodged the past few years in the preferred stock of the McKinney Steel Holding Co., following the lapse of preferred dividends. Of the $7,250,000 preferred outstanding, about one third has been held by the defunct Union Trust Co., of Cleveland. A majority interest in the Corrigan, McKinney company itself was obtained in 1930 by the Cleveland-Cliffs Iron Co., headed by W. G. Mather.

Republic, which was put together in December, 1929, by the Cyrus S. Eaton interests of Cleveland, is a consolidation of the former Republic Iron & Steel Co., Central Alloy Steel Corp., Bourne-Fuller Co., Donner Steel Co., Interstate Iron & Steel Co., Witherow Steel Co., Dilworth, Porter & Co., Union Drawn Steel Co., and Steel & Tubes Inc.

Republic's capitalization is $91,289,343 in common stock and $63,999,900 in preferred stock, with funded debt of $48,818,850. These figures are as of last Dec. 31. Some adjustment of the cumulative deferred dividend on the preferred stock may be made as part of the realignment.

Corrigan-McKinney, since its incorporation in 1901, has been identified with such well-known figures in the steel industry as Price McKinney, James W. Corrigan Sr., founders; Donald B. Gillies, president; and Henry T. Harrison, now vice president in charge of operations.

The company started originally as the McKinney Steel Co., the name being changed to the Corrigan, McKinney Steel Co. when the senior Corrigan became affiliated with the enterprise. Subsequently it was changed back to the McKinney Steel Co., when Price McKinney regained control, and following the death of Mr. McKinney and the passing of control of the company to James Corrigan Jr., it was again renamed the Corrigan, McKinney Steel Co.

TOM M. GIRDLER: Heading up the combination of Republic, Corrigan-McKinney and Truscon, this young steel executive—he is in his early fifties—entrenches his position as a leader in the industry. Only the Steel corporation and Bethlehem exceed his setup, which can be considered about a $350,000,000 one even at today's figures

It has four blast furnaces, with a combined annual capacity of 1,000,000 tons of pig iron; 14 open hearths with annual capacity for 1,000,000 tons of steel ingots; its own finishing capacity being limited to bar mills.

Corrigan-McKinney brings to the merger the Newton Steel Co., with plants at Monroe, Mich., and Newton Falls, O., the latter now being closed. In this company Corrigan-McKinney has an 80 per cent interest. Corrigan-McKinney also operates the N. & G. Taylor tin plate plant at Cumberland, Md. Rumors concerning the sale of this company to a can manufacturer were current recently.

Prominent Fabricating Interest

Truscon, of which Julius Kahn is president, is a $14,000,000 company. It has plants in Youngstown, O., Cleveland, Detroit and Los Angeles, and also has a substantial interest in the Truscon Steel Co. of Canada and the Japan Steel Products Co., of Japan. Several years ago Truscon took over the metal lath and similar fabricating steel divisions of the Berger division of Republic.

One of the largest consumers of steel in the country, Truscon manufactures light structural steel building materials, windows and window casements, hangars, electric refrigerator cabinets and numerous allied products. The association of Truscon with Republic assures the latter of an even greater outlet for steel than before, and emphasizes the trend of Republic to identify itself with the consuming as well as the producing end of the steel industry.

The acquisition of Corrigan-McKinney greatly improves the competitive position of Republic in regard to the automotive markets. The Newton mill at Monroe has an annual capacity of 200,000 tons of black sheets and is only 30 miles from Detroit. At Cleveland, on the waterfront, is capacity for making semifinished steel for water shipment to Monroe during the season of navigation, and for producing pig iron and bars, which also have a broad automotive outlet.

Corrigan-McKinney also supplements the iron ore reserves of Republic, increasing them from 122,000,000 tons to about 175,000,000 tons.

Structural Code

THE second stay on the structural steel code which expired on Aug. 16 not having been extended, theo-

retically this moot code is technically in effect. But structural fabricators have refused to accept it because all control of the erection of steel is lodged in the construction code, and efforts were continued last week to bridge the gap.

Up to late Friday no official action had been taken. It was said that a new executive order has been prepared but it was not signed before General Johnson left Washington on a two-week vacation, and it is understood that the order must be signed by him.

¶While New Jersey officials last week won complete autonomy from NRA in regard to state codes affecting local industries and the service trades, it is understood that other New Jersey codes are to contain provisions similar to comparable national codes. Therefore, the future of the state structural steel code hinges upon the final decision at Washington on the national structural code.

Iron Ore

THE United States Steel Corp. "would be better off" if it did not own iron ore properties.

This statement was part of the testimony by George O. May, public accountant of New York, who has been public auditor for the Steel corporation since its organization, in the iron ore tax suit hearing now in progress before five Minnesota district judges in Duluth.

The advantage gained by such ownership, he said, was more than offset by the loss from the large capital investment. He characterized the acquisition of large raw material reserves by consuming industries as "a mistaken policy," bringing many of them into the position of being "land poor."

Though it was not part of his testimony, the Steel corporation generally is credited with owning or controlling 50 to 60 per cent of the 1,400,000,000 tons of reserves of merchantable iron ore in the Lake Superior district. It is the principal defendant in the suit by Minnesota to collect $1,750,000 in delinquent taxes from iron ore companies.

Stewart M. Marshall, a consulting engineer, testified that during the period 1927-31 the average cost of a ton of pig iron made solely from iron ore was about $17 a ton, compared with an average of $14 for that made from scrap and ore.

Guy E. Diehl, general engineer for the Oliver Iron Mining Co., Steel corporation subsidiary, gave his opinion to the court that the average annual rate of shipments from the Mesabi range from 1927-31—31,500,000 tons—would not be reached again before 1939 or 1940.

Mr. Diehl placed a cash value of $41,580,000 on the 36 Oliver ore properties on the Mesabi range. Dr. William O. Hotchkiss, president, Michigan College of Mining and Technology, previously testified to a value of $38,452,000, while the state puts a value of $96,687,366 on the same properties.

Steel Code

ROTARY ELECTRIC STEEL CO., Detroit, which last year completed a plant for the production of nondendritic steel in the electric furnace and cast by a rotary process, but has since installed capacity for rolling merchant steel bars, cold drawing bars, and cold rolling strip steel, has petitioned the American Iron and Steel institute for an amendment to the NRA steel code to designate Detroit as a base on merchant bars, cold drawn bars and cold rolled strip steel.

¶Gate City Iron Works, Omaha, Nebr., Builders Structural Steel Co., Cleveland, and Paper, Calmenson & Co. Inc., St. Paul, have signed the jobber agreement of the steel code, covering reinforcing bars.

Basing Point

SOUTHERN Association of Steel Buyers and Consumers which on June 30 complained to federal trade commission against the $3 a ton differential at Birmingham over Pittsburgh on shapes, sheets, wire and wire products, last week continued the newspaper phase of the controversy when it replied to a statement by Robert Gregg, president of the Tennessee Coal, Iron & Railroad Co., in defense of the differential. These points are made by the Southern association:

Under the steel code, southern steel mills are practically closed, but eastern and northern producers are shipping in large quantities, reversing the practice prior to the code . . . . The southern market, because of the $3 differential, "presents a rich territory from a price standpoint and one into which the northern producer is eager to dump his products" . . . . Objection to the differential is raised because every consumer of steel in the South pays for it . . . . Since basic iron at Birmingham is $13.50, compared with $19 in Pennsylvania, the cost of producing steel in the South should be less and "it is inconceivable that our labor is so inefficient that this enormcus advantage is entirely dissipated in labor costs." . . . The high cost of roll changing would be decreased if the differential were reduced and volume gained by southern mills.

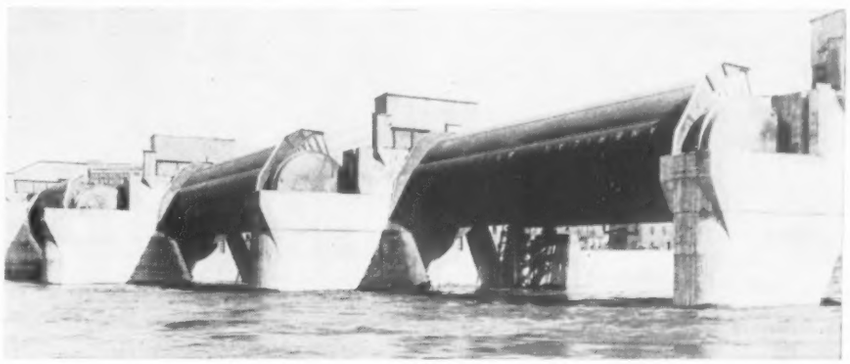
Among members of the Southern association are the Ingalls Iron Works Co., Chicago Bridge & Iron Works, Lamson & Sessions Bolt Co., Vulcan Rivet & Bolt Co., Southern Steel Works, Birmingham Fabricating Co., and Perfection Mattress Co.

New Capacity

FORD MOTOR CO. last week ordered from the United Engineering & Foundry Co., Pittsburgh, an 84-inch cold-rolled strip mill, single stand, reversing, 4-high, costing $400,000, to be used for cold-rolling hot strip from the wide continuous mill which United is now building for Ford. With the $5,500,000 turbine generator which Ford has ordered for its power house from the General Electric Co., a total of $15,900,000 is being expended on plant improvements at Dearborn.

¶Relining of one of the two Hanna blast furnace stacks at Detroit has been started by Arthur G. McKee Co., Cleveland.

¶Changes in mill and building design were reported last week as still holding up wide strip mills contemplated by the Carnegie Steel Co. at McDonald, O., and the National Steel Corp. at Detroit, owner of the Hanna stacks previously mentioned. Some announcement by the United States Steel Corp., concerning improvement to its properties as part of the $5,-



STEEL THE MODERN CANUTE: Whether as reinforcement in concrete or as the face of the dam itself, it takes steel to restrain water. This view is of one of the PWA projects on the Mississippi river, near Rock Island, Ill., showing the roller lift type favored on navigable streams. Wide World photo

000,000 improvement program, is looked for shortly.

¶Youngstown Sheet & Tube Co. will complete its steckel-type cold strip mill at its Indiana Harbor works Sept. 1.

Transportation

HISTORY was made recently when two barges loaded with steel by the Carnegie Steel Co. in the Pittsburgh district delivered their cargoes, totaling 1700 tons, at Houston, Tex.

In the past, steel from Pittsburgh has been unloaded in New Orleans and placed on ocean-going steamers for the remaining 405 miles of the journey to Houston.

These barges used the intercoastal canal from its intersection with the Mississippi river in Louisiana to its juncture with the Houston ship canal. Except for dredging work and a bountiful crop of water lillies, there were no obstructions, and the time through the intercoastal canal was 5½ days.

¶St. Louis scrap dealers are considering barge movement of scrap to northern consuming markets as well as developing an export trade, because prices at St. Louis are exceptionally low, mill stocks are heavy, and operating costs have been increased by the scrap iron code, according to Benjamin Schwartz, director-general of the Institute of Scrap Iron and Steel Inc.

Production

STEELMAKING operations dipped 1 point last week to 20½ per cent, and the rate this week will hold at about this level, with the possibility of a further recession. Eastern Pennsylvania, Youngstown and Pittsburgh went off ½, 1 and 5 points respectively, while slight gains were noted in the Chicago and Cleveland districts. Other districts remained unchanged. Details for various districts follow:

Youngstown—Down 1 point last week to 21 per cent, and the rate will probably hold at this level this week. Resumption of Carnegie Steel Co.'s Ohio works offset the shutdown of Youngstown Sheet & Tube Co.'s open-hearth plant at Campbell, O., until after Labor day.

Detroit—For the third consecutive week, steel ingot production was at 77 per cent, with 13 out of 17 open hearths active. Even though Ford Motor Co. is closing most of its departments from Aug. 24-Sept. 4, all nine of its open-hearth furnaces will continue making steel, but on a reduced heat schedule. Therefore, steelmaking operations here for this week may be estimated at 60 per cent. Michigan Steel Corp. sheet mills resumed rolling schedules Aug. 20 after a week's shutdown, with approximately 1000 employes back at work.

New England—Unchanged at 29 per cent last week, with ingot operating schedules uncertain for this week. Output, however, will probaby be downward. There are but three furnaces still on in the district.

Central eastern seaboard—Off fractionally, hovering around 20 per cent. Even at the present restricted rate, most producers are being forced to stock some ingots.

Cleveland-Lorain—Up 2 points to 15 per cent, last week, with Otis Steel Co. relighting its third open hearth, Corrigan, McKinney Steel Co., continuing with three and National Tube Co., Lorain, remaining down. National Tube will not resume open-hearth operations this week. Otis Steel has blown out one of its two blast furnaces.

Chicago—Increased slightly more than 1 point to nearly 30 per cent last week, due to increased operations by one interest. Additional changes prior to September are expected to be slight. Steelworks are operating 9 of 36 blast furnaces, while two merchant stacks also are in blast. American Sheet & Tin Plate Co. plant at Elwood, Ind., increased operations, putting all 20 hot mills on a night turn schedule Aug. 20, compared with 14 on a night turn schedule the week previous.

Pittsburgh—Dropped 5 more points last week to average 10 per cent. This rate is the lowest since the week of July 4, 1932, when 5 per cent operations were recorded. The few open-hearth departments of district plants which are operating are all on greatly reduced melting schedules.

After two weeks shutdown, National Tube Co., is reopening at McKeesport, Pa., with one blast furnace and two converters this week, but its Ellwood City works closed Aug. 25 for two weeks. Open-hearth departments of the American Rolling Mill Co., at Butler, Pa., and Duquesne and Clairton works of Carnegie Steel Co. remain closed.

Resumption of blast in one of the National Tube Co.'s blast furnaces at McKeesport, Pa., makes 16 out of 60 steelworks blast furnaces now in operation here. However, the advance is only temporary as some of those active will be either blown out or banked shortly. For the time being, 10 out of 38 blast furnaces are operating here for subsidiaries of the United States Steel Corp., and 6 of 23 for four independent works.

Wheeling—Steady at 26 per cent last week, with 10 out of 39 open-hearth furnaces operating. Individual rates for the two active plants here continue unchanged, one mill having six open-hearth furnaces on and the other four. Tin plate operations were stepped up last week when on Aug. 23 Wheeling Steel Corp. put on six more tin mills at Yorkville, O., making 18 mills now operating there. The company's Portsmouth, O., division remains closed.

Birmingham—Held at 25 per cent last week, six open hearths continuing in operation. Slight improvement is anticipated for this week, with Gulf States Steel Co. resuming operations in all of its departments, after six weeks shutdown. This resumption follows upon the pledge of the workmen that there will be no labor trouble.

Fairfield wire and nail plant of the Tennessee Coal, Iron & Railroad Co. has shut down.

NRA

A CODE for the open die forging industry, heard Aug. 22 by Deputy Administrator Janssen, provides minimum wages from 40 cents per hour in the larger cities of the East and Middle West to 25 cents in the South, with the work-week 40 hours, but firemen permitted 45 hours, watchmen and janitors 56, and maintenance and delivery workers up to 44.

Fair trade practice provisions provide for the promulgation of trade practices for local areas. Gilbert H. Montague, counsel for the Midvale Co., Philadelphia, suggested amendments making the labor provisions parallel those of the MAPI code more closely. J. B. Clough, representing the Johnston & Jennings Co., Cleveland, was granted a week in which to file a brief.

¶R. C. Dougherty, president of the Columbian Cutlery Co., Reading, Pa., has been recognized as a member of the code authority for the saw and steel products manufacturing industry.

¶Steel plate fabricating and open steel flooring industries have petitioned for termination of exemption from administrative order X-36.

HEARING SCHEDULED

Deputy Administrator Foster will receive until Sept. 4 any objections to the proposal of the cap screw manufacturing industry to make 2 per cent the maximum discount which may be offered or allowed by any member of the industry.

¶Public hearing on proposed amendments to the supplementary code for the metallic wall structure industry, a division of the fabricated metal products manufacturing and metal finishing and metal coating industry,

will be held Aug. 29. In addition to the budget, a system of fines for code violations will be considered.

¶The code for the pipe tool industry was approved Friday.

CODE AUTHORITIES APPROVED:

¶Saw mill machinery: J. L. Monaghan, Filer & Stowell Co., Milwaukee; Loren L. Prescott, Prescott Co., Menominee, Mich.; A. E. Hall, Allis-Chalmers Mfg. Co., Milwaukee; G. A. Bingenheimer, Diamond Iron Works, Minneapolis; J. S. Reid, Clark Bros., Co., Olean, N. Y.; Z. W. Wheland, Wheland Company, Chattanooga, Tenn.; and George B. Sumner, Sumner Iron Works, Everett, Wash.

¶Complete wire and iron fence industry: W. H. Bleecker, Page Steel & Wire Co., Monessen, Pa.; W. F. Brannan, president, Anchor Post Fence Co., Baltimore; J. S. Eskin, Spencer Steel Co., New York; J. T. Hanley, American Wire Fence Co., Libertyville, Ill.; C. E. Kendall, Pittsburgh Steel Co., Pittsburgh; H. I. Raymond, Enterprise Iron Works, Indianapolis; W. L. Robertson, W. F. Robertson Steel & Iron Co., Cincinnati; W. S. Rich, Stewart Iron Works Co., Cincinnati; and M. J. Sayles, Independent Fence Co., Brooklyn, N. Y.

¶Foundry equipment industry: S. C. Vessy, Cleveland; R. S. Hammond, Harvey, Ill.; F. R. Wallace, Philadelphia; E. O. Beardsley, Chicago; T. W. Pangborn, Hagerstown, Md.; D. A. Weber, Fort Wayne, Ind.; E. A. Pridmore, Chicago; V. E. Minich, Mishawaka, Ind., and H. S. Simpson, Chicago.

Foreign

AMERICAN Commercial Attache at Berlin has advised the department of commerce in Washington that under a recent law a control office for the German iron and steel industry has been organized. All companies manufacturing or trading in iron and steel products are required to register with it.

¶The President has signed a trade agreement with Cuba, in which substantial reductions in import duties to the United States have been obtained for many iron and steel products, mostly by increased preferences.

The outstanding concessions are those on steel bars and structural shapes, on which 60 per cent preferences were obtained. Other important concessions include higher prefrences on piping, furniture and other made-up articles, tools, implements and miscellaneous hardware.

Farrell Sees Fall Upturn

Returning from Europe Thursday, James A. Farrell, retired president of the United States Steel Corp., was optimistic concerning business this fall, saying he expected an upturn. The European situation was better than he expected, there being less war talk there than here.

Topping, Ex-Republic Chief, Succumbs to Illness

JOHN A. TOPPING, veteran steel executive who retired as chairman of the Republic Iron & Steel Co. after its absorption by the new Republic Steel Corp. late in 1929, died Friday, Aug. 24, following an illness that for a number of months had confined him to his home in Greenwich, Conn.

Born in St. Clairsville, O., in 1860, he started with the Aetna Iron & Nail

John A. Topping

Works, Bridgeport, O., where he remained for 23 years. When the American Sheet Steel Co. was organized in 1900 he was made first vice president. Here he stayed until 1903, when he resigned on account of ill health, and went abroad.

In the spring of 1904 he reorganized LaBelle Iron Works, becoming president. In July, the same year, he returned to the United States Steel Corp. as president of the American Sheet & Tin Plate Co., where he remained until 1906. Then he became associated with interests which had assumed control of the Republic Iron & Steel Co. and Tennessee Coal, Iron & Railroad Co. He was elected president of the Republic company in 1906, and chairman of Tennessee. He became chairman of Republic in 1908. He was an honorary director of the American Iron and Steel institute.

A son, W. B. Topping, is western sales manager of the Bethlehem Steel Corp. with offices in Detroit.

Labor

IN THE second week of its barnstorming tour through the Middle West, the National steel labor relations board sat at Portsmouth, O., to consider complaints of employes of the Wheeling Steel Corp. plant there.

To the contention of the Amalgamated Association of Iron, Steel and Tin Workers that the Portsmouth plant was closed early in July to freeze it out, the company through its officials maintained that shutdown was due to insufficiency of orders. Testimony was offered that stocks of finished steel at Portsmouth are more than 20 times the recent orders.

CASES LEFT UNDECIDED

The usual charges of discrimination against members of the Amalgamated were made, also that Wheeling was vigorous in fostering its company union. It was developed by counsel for the Wheeling company that the company was always willing to meet its men as employes.

As it moved on to Detroit to hear a complaint involving the Great Lakes division of the National Steel Corp., the steel labor board left the Wheeling case hanging in mid-air, as it had the cases heard in Pittsburgh the week preceding. These cases involve the Apollo Steel Co., West Virginia Rail Co., and Standard Tin Plate Co. In the case of Apollo, the company agreed to meet with the Amalgamated as the representative of the majority of its employes. In the other cases, rumblings of court action to test the constitutionality of the board were heard, but without a definite stand.

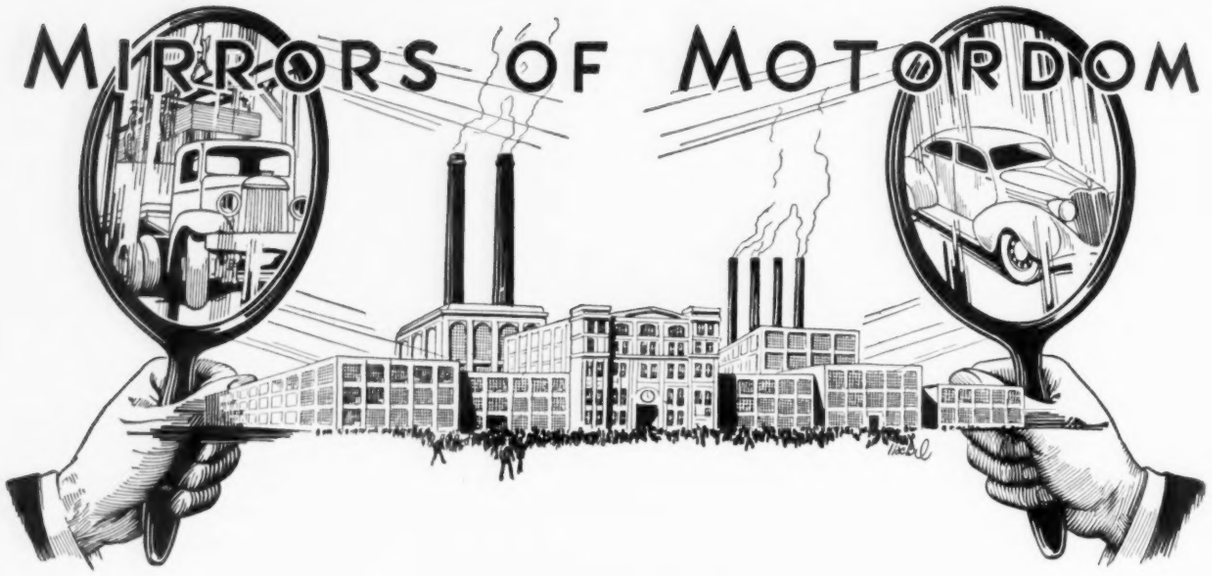
ALUMINUM TRUCE FAILS

Meanwhile, plants of Aluminum Co. of America went into the second week of idleness as employes picketed them, but found no one to contest with. A truce proposed by a department of labor concilator, involving the usual pledge to arbitrate, was rejected by the company, for one reason because it maintained that such demands as the closed shop and the checkoff system were not subject to arbitration.

Foreign Trade

JULY exports of iron and steel totaled 233,186 tons, compared with 219,406 tons in June and 83,311 tons last July. In seven months exports have totaled 1,486,360, compared with 654,061 tons in the first seven months of 1933, according to the iron and steel division of the bureau of foreign and domestic commerce.

MIRRORS OF MOTORDOM



DETROIT

AT DUSK last Friday night the padlocks snapped shut on the plant gates of the Ford Motor Co., not to be opened until after Labor day. The news was not calamitous, nor was it exactly unexpected. Rather, it marked the transitory state the automobile industry seasonally is passing through.

When Ford settled down to a well-earned vacation—and most other motor car makers are following suit some time this week—the move was symbolic of the curtain drawing a close over a very definite phase of the 1934 season. Heavy production schedules on this year's automobiles are probably over.

To beat as graceful a retreat as possible from the Labor day cleavage point, the industry has framed desultory schedules for the six to eight weeks dating from early September. It will be in the usual twilight zone between the end of the run on current models and start on new ones.

At a reduced rate, manufacturers will continue to turn out this year's cars for at least another two months. Contrary to what was generally held early this summer, there will not be a swingover to production of 1935 models in September, nor in October.

In view of the nation-wide business uncertainty, the automobile industry would rather stand pat and call for no cards just now. It would rather battle a slow fall with extensive advertising campaigns. It would rather be satisfied with slower sales than risk something new on an unpropitious market.

This strategy makes it certain that most 1935 cars will not be presented until January, despite the fact that most plans are completed.

TO TAKE the case of the two leaders as indicative, Detroit hears that Chevrolet will schedule 54,000 assemblies for September, and Ford 35,000. In August, Chevrolet will have made 79,800-odd, barring last-minute changes this week, and Ford some 52,000 units. Ford's shutdown, covering in part the last week of August, has an obvious effect on assemblies.

Ford so far has released materials from outside sources on the basis of only 35,000 cars for September, for its field stocks are relatively higher than Chevrolet's. In round figures, close estimators say that Chevrolet is carrying about 50,000 models in the field; Ford, something over 75,000 cars.

A figure of 70,000 models in dealers' hands for either would not be disproportionate at this time of year. Therefore, Ford is near normal, Chevrolet deficient. Perhaps this more than anything else is the basis for Chevrolet at this time working tentatively on the proposal of making 45,000 to 50,000 models in October.

Accompanying Ford's shutdown is the observance of a holiday in Chevrolet's Detroit plants. Alternately, the gear and axle division there is closed one week at this time; the forge plant a second week. The latter division is ahead on certain forgings, thus the shutdown will serve as a breathing spell to balance stocks. Other General Motors divisions, including General Motors truck at Pontiac, are closing as August ends.

BY OCTOBER, Chevrolet and most of the General Motors units, will have emerged from the blueprint stage in regard to new models. Likewise with Ford, for close observers say that well-defined plans are under way there on a series of revisions to the present V-8.

Ford is expected to stand pat on his engine, and 1935 changes will be largely in the chassis, focusing on the frame. There is no longer any doubt that Ford is going to set his present motor in a frame that may be anywhere from 3½ to 9 inches longer than the present 112-inch wheelbase. Units from 115½-inch to 121-inch are being experimented with.

Engineers have been busy designing new cross-members and conducting experiments to determine what length asures certain models, notably the sedan, which is Ford's most popular edition,—maximum comfort at certain speeds. So powerful is the present V-8 power plant, Ford can well use a longer chassis with no handicap.

At the same time, accompanying body design curves are being worked out and last week a leading Detroit shop had estimating work on a new coupe model. The new Ford coupe doors are slightly wider than the present and there is a pronounced curve to the top line of the panel instead of the present square-cut door with only a slight forward bevel. To synchronize this curving, the radiator and back panel slopes are to be more streamlined.

Subsdiaries of General Motors still are using LaSalle as their model, and it appears that the knife-shaped front-end of the present LaSalle undoubtedly will be the major point of distinction from 1934 in next year's Chevrolets, Buicks, Pontiacs and Oldsmobiles.

Chevrolet will have a new type of gasoline tank that should interest welders. It will be smaller than the present 14-gallon receptacle, though as usual will be made from terne plate, a steel sheet coated with a mixture of lead and tin.

The 1935 Chevrolet tank will be stamped into two equal sized shells, then welded together latitudinally directly around what is the finished tank's mid-section. Present tanks for this General Motors unit are made by soldering top and bottom sections

and "sweating in" the end oval-shaped pieces.

Chevrolet is also planning a new type of battery suspension with a differently designed bracket. Bids are being asked on these and other parts now for requirements up until next July.

SEVERAL years ago Continental Motors cast envious eyes at the swelling trend to low-priced automobiles. Gathering together funds, talent and plans it drew up the Continental automobile, put on the market in three models.

Original thoughts of Continental were to make 100,000 small cars first off, selling each for $400. Truly, this was what the American public wanted—cheap transportation. But by the time the smoke had settled, production costs had risen to the $700 bracket, the dealer structure soon collapsed because gross commissions were shaved to $35 a car, and ultimately only 5000 Continentals were made.

For several years Continental has kept its small-car patents, but last week saw the sale of the "Beacon" model to Graham-Paige completed. Graham will augment its present line with the smaller car and try to sell the model for $400.

Right now Graham is ironing out costs. Motor assembly figures are being compiled, the old "Beacon" is being price analyzed and torn down part by part. No doctor's microscope ever was more searching.

Last week production men themselves at Graham could not tell what the total cost to make the small car would be, though they were hitting for a $400 retail tag. The motor's costs were being held up on a determination of cylinder head design. A part plaster and wood "Beacon" body model at Graham's plant in Detroit last week predicated some rear fender and rear panel changes.

Hayes Body at Grand Rapids likely will make the small Graham's bodies, though it is still a question with Graham officials whether to give the contract to Hayes or move jigs, tools, presses, welders and other machinery, that they bought from Continental, down to their own body plant at Wayne.

Whether this small car will be titled "Graham," "Beacon" or by some other cognomen also is a question to be settled. Graham-Paige probably won't be in a position to publicly announce the car until after Jan. 1.

APPLICATION of Pierce-Arrow to reorganize under the bankruptcy act, followed by its feeler to Reo for a merger, has precipitated a crop of merger rumors which has expanded to include practically every manufacturer outside the big three—Ford General Motors, and Chrysler.

Automobile Production

Passenger Cars and Trucks—U. S. only
By Department of Commerce

	1932	1933	1934
January	119,344	130,087	156,907
February	117,418	106,888	231,707
March	118,959	118,002	331,263
April	148,326	180,713	354,745
May	184,295	218,347	331,641
June	183,106	253,387	308,051
July	109,143	229,357	266,575

Estimated by *Cram's Reports*

Week Ended	
Aug. 4	58,554
Aug. 11	57,539
Aug. 18	53,854
Aug. 25	52,351

Even the revival of Willys-Overland and Franklin is rumored.

Some consolidations would not surprise Detroit. There have been few profits outside the big three. One compilation shows that ten automobile manufacturers, excluding General Motors, piled up an aggregate deficit of $6,187,000 in the first half of 1934, against a deficit of only $5,342,000 in the first half of 1933.

It is easy on paper to assemble enough independents to form a fourth group which would compete with the big three in all price ranges. The catch, however, is that to effect such a consolidation would bring together an enormous over-duplication of plant facilities which, in some fashion or other, would have to be washed out.

Moving contrary to this trend, the formal divorce of Studebaker and White is drawing nearer. Once accomplished, the present management of White, according to reports, may feel that it has accomplished an objective, and important changes may take place this fall.

Recipe for Cooling Steel Workers: Salt, Gumdrops

HEAT from the open hearth may be warming when the mercury is on the skids, but during the summer when outside temperatures join hands with it, it has been so overwhelming as to fell numerous men in the mills.

"Heat cramps," a summer steel mill ailment, this year drew the attention of four specialists from the Harvard school of medicine who journeyed to Youngstown, O., and organized a special heat clinic at one of the hospitals to study this unusual affliction.

Last week they were ready to report their findings: That water and a diet containing much more than the normal amount of salt was the best treatment. Many steel mill superintendents have been dispensing gum drops and salt to their open-hearth employes during the recent hot weather, but discredited is the use of glucose, according to these doctors.

Lauds Steel in Affixing Plaque to Prize Bridge

A stainless steel plaque, designating the Shark river bridge as the most beautiful bridge of modern size built in 1933, was unveiled Aug. 18 by V. G. Iden, acting secretary of the American Institute of Steel Construction, New York, which made the award. James Baker, vice chairman of the New Jersey highway commission, accepted the award on behalf of the state.

In making the presentation Mr. Iden said:

"Steel is one of the finest construction materials ever devised. It enables builders to construct taller skyscrapers on lighter foundations. It permits of greater spans of less dead weight over longer distances. Steel has therefore increased the economy of bridges. They have lifted the traveler out of the mire and the water. For that alone we have reason enough to be thankful."

Will Re-erect Huge Crane

Wellman Engineering Co., Cleveland, has received a contract for re-erection of a 200-ton capacity hammerhead crane at the naval base at Pearl Harbor, T. H. The crane was built by the Wellman company during the war and erected on the Atlantic seaboard, afterward passing into the hands of the government. Two years ago the Wellman company dismantled the huge machine and it was shipped to Pearl Harbor, where it will be placed in service as soon as it can be erected.

Traffic Club To Golf

The Traffic Club of Pittsburgh will hold its fall golf tournament at the Pittsburgh Field club Aug. 29, followed by a banquet in the evening. Warren W. Brown, Nickel Plate railroad, is chairman of the committee.

Buy Control of Lumber Co.

Aluminum Co. of America, Pittsburgh, and Chicago Bridge & Iron Works, Chicago, have recently acquired large stock interests, which together aggregate a majority in the American Lumber & Treating Co., Pittsburgh.

WINDOWS OF WASHINGTON

WASHINGTON

THREATENED with a strike in the cotton textile industry which might have put as many as a half million workers on the street just as the congressional campaign was opening, the President last week stretched his powers under the recovry act to new limits.

By executive order he imposed on the industry a 10 per cent reduction in working hours and a 10 to 11 per cent increase in wage rates, the effect being to grant labor for 36 hours' work exactly what it had been receiving for 40.

This step was hailed by Sidney Hillman, president of the Amalgamated Clothing Workers of America, as a signal victory for labor, proving that "codes are not rigid instruments which freeze conditions at a certain point but are instead active, adjustable laws for industry which can be revised when it is found they do not serve the end to which they were directed."

And so, a precedent is set for all industry. The way is open for wages and hours in steel to be revised by presidential fiat. While all NRA codes have contained maximum weekly hours and minimum wage rates, they have been with the assent of the industry. The action in the textile case is believed to be the first direct wage and hour decree from the White House.

PECULIARLY enough, the textile situation was almost an exception to the general strategy of organized labor at this time.

The primary objectives of NRA were to raise wages and spread work. A year ago organized labor was cooperating vigorously in the matter of wages, obtaining, for example, the 10 per cent increase in the steel industry at the time the steel code was being considered.

As for spreading work, organized labor has not really extended itself. It apparently became winded after getting higher wages. Now it appears to be trying to consolidate its gains by seeking recognition and other more or less intangible ends.

For two weeks the national steel labor relations board has been sitting at Pittsburgh, Portsmouth, O., and Detroit, hearing complaints of the Amalgamated Association of iron, Steel and Tin Workers, but the issue is not wages. It is recognition, the right to hold elections, and collective bargaining.

Nothing is so nebulous as recognition. If a committee can obtain a 10-minute conference with a plant superintendent, that enables the committee to go back to the local lodge and claim it has won recognition.

At an automobile plant in Cleveland a few days ago a walkout was threatened on seniority rights. Young agitators found this an issue which readily attracted the older workers. Plenty has come out of Detroit recently on dissensions with American Federation of Labor unions, but not a word as to hours or wages.

Bad "Breaks" in the Press

Steel, incidentally, got two bad "breaks" recently on labor publicity. A New York newspaper that is ordinarily considered conservative placed a strong pro-labor interpretation on the adjustment of the matter involving the Republic Steel Corp. with the Amalgamated at its Niles and Warren, O., plants.

The same newspaper a week ago forecast that steel executives might throw their code up on account of the labor provisions. It is true that the industry has been in a more comfortable position, and if price provisions are deleted from the code—which is a possibility—all that would be left of the code would be the labor sections—which would mean that the industry would be giving all and receiving nothing. But steel executives will not take the initiative.

THE young men who clip and mark newspapers for the President and those of his advisers who compile reports on the state of business, quite naturally seek the bright spots.

And there have been quite a few recently. Here is the Ford Motor Co., after appropriating $10,000,000 for a new blocking mill and a continuous sheet-strip mill ordering a mill for cold-rolling strip, costing $400,000, and placing a 110,000-kilowatt turbine generator and other power house equipment costing $5,500,000. The total for Ford alone is $15,900,000.

Then there is the $3,000,000 which the Fisher Body Co. is to spend for expansion, plus $1,000,000 for rearranging existing plant facilities. Chevrolet Motor Co., also a General Motors subsidiary, is building an assembly plant at Baltimore.

Both the Carnegie Steel Co. and National Steel Corp. are considering wide strip mills. The United States Steel Corp. is scanning plans for improvements costing $5,000,000 and more.

There are two ways of interpreting these developments. Washington, of course, likes to regard them as harbingers of better times, as preparing for the great American boom which an English author says is just ahead.

But there also is some opinion that the industrial expansion under way may be an anchor to windward. One large industrial corporation which is putting some millions into new capacity (not one of the companies before mentioned) takes this attitude: It has some millions in the bank. If inflation comes a bank balance will not mean much. If good times return, it will be in position to benefit from them.

Last week one of the largest iron and steel scrap interests in the United States purchased 70,000 tons of scrap from a southern railroad. While it undoubtedly will sell as opportunity arises, it regards the purchase as a capital investment.

IRON and steel scrap dealers are tiring of paying 5 cents an hour to many of their workmen as an earnest of their loyalty to the new deal, par-

ticularly NRA, and in the next few days a petition will be filed by Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel Inc., asking relief.

It seems that last September, when the President appealed to uncodified industries to hurry up NRA by signing the blanket code, many scrap dealers got in line. They agreed to pay the minimum of 37½ cents per hour.

The permanent code for the waste materials trade, signed by the President on March 26 of this year, set up a minimum hourly rate of 32½ cents. But the code also carried the standard provision that in no event should any rates of pay in excess of the new minimum be reduced.

So those dealers who did not sign the blanket code last September have been paying the regulation wage of 32½ cents an hour, and those who were patriotic enough to back up the President have had to continue to pay 37½ cents.

THOSE who feel that many of the liberties for which George Washington fought have been obscured in the past year will have further cause for alarm as they note that even his monument is now being concealed.

Last week a network of steel tubing began to rise at the base of the monument, as the first job of pointing and cleaning in the monument's history was initiated. This new face for the monument is part of the new deal, as $100,000 appropriated by PWA is financing it.

At the base are 76 footings, each calculated to carry a load of 8½ tons. The ends of the tubing are milled, so that the next sections will set inside them. Crossbars will distribute weight and add strength. At each joint there will be two bolts, but they are a concession to safety as weight alone is expected to hold the scaffolding in place.

Every 6½ feet platforms of fireproofed planks will be laid, on which workmen will stand. In all, between 550 and 600 tons of steel tubing will be used, not quite one ton to each of the 555 feet in the monument.

THOSE naval vessels which were awarded in the record time of one week from the opening of bids do not loom particularly large so far as hull steel requirements are concerned. The 11 to be built in private yards will take 35,000 to 40,000 tons of plates, shapes and bars; the 13 placed with navy yards about 25,000 tons.

But naval vessels are self-contained mechanisms, in effect floating machine shops, and few projects fan out into so large a circle of suppliers. In addition to the hull steel there will be armor plate, boilers, turbines, generators, motors, hoists, chain, plumbing, machine tools, to say nothing of guns. Practically all the latter will be supplied by navy yards, but their base is forging billets.

Originally it was contemplated that there would be an even break of the 24 vessels between the private and the navy yards. Representatives of organized labor attempted to divert more of the construction to government yards, contending that the shipbuilding code does not adequately protect workers, even though its maximum work week is 32 hours contrasted with 40 in navy yards.

High navy officers were glad they did not have to pull the lucky bidders out of a hat, as they have been doing with bids for material. They are, however, looking forward to bids the middle or latter part of September when steel for the ships awarded government yards wil be bid. This may be the first real test of the 15 per cent reduction permitted on government purchasing.

The 11 ships to be built in private yards will provide full-time work to 13,300 men the first year, at a daily average wage of $5, it is estimated.

How Ships Were Divided

For purposes of the record, the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., has been awarded a 10,000-ton cruiser at $11,650,000; New York Shipbuilding Corp., Camden, N. J., a 10,000-ton cruiser at $11,975,000; Federal Shipbuilding & Dry Dock Co., Kearny, N. J., (a Steel corporation subsidiary) two heavy destroyers at $3,946,000 each; Bethelehem Shipbuilding Corp., Quncy, Mass., two light destroyers at $3,784,000 each; United Dry Docks Inc., New York, two light destroyers at $3,430,000 each; and Electric Boat Co., Groton, Conn., three submarines at $2,387,000 each.

Awards to navy yards were one light cruiser to New York, one heavy cruiser to Philadelphia, two submarines to Portsmouth, N. H., two light destroyers each to Boston and Bremerton, Wash., three light destroyers at Norfolk, Va., and one light destroyer and one submarine to Mare Island, Calif.

Government yards are now at work on 22 warships, and private yards on 23. When these vessels, plus the 24 just let, are completed, the United States will still lack one aircraft carrier, two light cruisers, 51 destroyers and 24 submarines below treaty strength.

Speaking of warships, there is a purchasing agent in Detroit—a man who would be rated among the first five in point of tonnage passing over his desk—who believes the automobile industry is paying to much "war overhead" in its steel. His theory is:

Automobile and parts makers principally buy the lighter steel products, such as strip and sheets. The larger steelmakers have large sums invested in equipment for producing armor plate, gun forgings and other materiel of war. Overhead is figured on the overall operation of a producer. Hence, each ton of steel bought for automotive purposes is "loaded" with overhead on munitions-making capacity.

The answer of the larger steel manufacturers is that the equipment maintained solely for war purposes is negligible, most of it having been scrapped after the Washington arms conference of 1922.

EXPECTED to come to a head Friday for announcement by the President in order to quiet a tremendous amount of speculation, the reorganization of NRA has been postponed until Sept. 10.

Friday morning, NRA Administrator Johnson and Donald R. Richberg, now engaged in co-ordinating NRA activities for the present, had separate conferences at the White House, following which it was announced that General Johnson would take a two weeks vacation and reorganization would be settled at Hyde Park on Sept. 10.

Protestations that there are no differences between General Johnson on the one hand and Mr. Richberg and Secretary of Labor Perkins on the other have been voluminous, but there is no doubt there is a division. The general apparently still visualizes himself as the head of any setup that is devised. The brain trust, along with the Richberg-Perkins group, apparently believes the general has served his purpose and a new leadership is required. Thus far, however, the President appears to be with the general, and the predictions of 99 out of 100 Washingtonians that a divorce was at hand are not borne out.

The President's view of NRA, it can be stated authoritatively, is that before the recovery act lapses on June 16, 1935, some kind of legislation will be required if it is to be made permanent. It is obvious, from his viewpoint, that some features like hours, wages and the prohibition of child labor must be retained.

This matter of extending part of NRA is separate from that of revamping the machinery now administering it. Some of the future plans involve price fixing and the anti-trust laws. It should be noted that the word liberalize has been used frequently in discussing NRA, and the possibility of the elimination of price provisions from codes and steps to enforce collective bargaining under section 7a with greater vigor cannot be dismissed.

To be in position, apparently, to receive the mantle from NRA in case it should be the heir, the federal trade commission has revised its regulations to permit more speedy action.

Industrial Men in the Day's News

E. A. Bateman, New Partner, Bauer-Wilson & Bateman

Thirty-two years of activity in coke and pig iron sales have brought him wide acquaintanceship.

He is resigning from a company with which he has been associated since 1904 in the Chicago office.

In his new connection he will continue to handle sales of pig iron, ferroalloys, fluorspar and coke.

E. A. BATEMAN, associated with the Chicago office of Pickands, Brown & Co. since 1904, has resigned, effective Sept. 1, to become a partner in the firm of Bauer-Wilson & Bateman, 310 South Michigan avenue, Chicago.

Mr. Bateman went to Chicago in 1902 from St. Louis, at which time he was connected with the Milwaukee Coke & Gas Co. He was instrumental in the introduction of Milwaukee Solvay foundry coke in the Central West when it was first produced.

Later he became associated with Pickands, Brown & Co. at Chicago, and through his activities the past 30 years is now widely known in the St. Louis and Chicago territories.

Bauer-Wilson & Bateman are succeeding to the business of Bauer-Wilson & Co., sales agents, due to the recent death of Thomas L. Wilson, a partner, who with Fred W. Bauer organized the firm in April, 1932. The new organization will continue to represent present connections as sales agent for producers of northern, southern, low-phosphorus and charcoal pig iron, alloys, fluorspar and by-product foundry, crushed and heating coke.

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J. J. Richards has been appointed manager of the vibrating screen department of Link-Belt Co., Philadelphia, succeeding Harry L. Strube, who has been promoted to the post of assistant chief engineer of the company's Philadelphia plants. Mr. Richards entered employ of the company in 1916 as a draftsman. He has been associated with the vibrating screen department since 1923.

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Russell W. Chew, formerly assistant engineer at the Pottstown, Pa., plant of McClintic-Marshall Corp., has been appointed resident engineer at the Rankin works, Pittsburgh, for the company, succeeding J. J. Ashton, resigned.

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J. D. Agnew of the Pittsburgh office of Continental Roll & Steel Foundry Co., East Chicago, Ind., has resigned, effective Aug. 31. For the past 12 years he has been active in sales work with the Wheeling Mold & Foundry division of Continental.

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C. H. Brushaber, formerly president of the Brushaber Steel Co., New York, has been appointed manager of the raw materials department of Otto Kafka Inc., steel exporter, in an expansion of the executive staff.

S. Naganuma, formerly associated with Mitsubishi Shoji Kaisha Ltd., New York, has been named manager of the Far East department.

S. A. Magrill, formerly with Lunham & Moore, has been made manager of order and traffic department.

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Henry M. Chase has retired from the engineering staff of the Worthington Pump & Machinery Corp., Harrison, N. J. He entered the engineering department of the Holyoke works of the Worthington corporation (then the Deane Steam Pump Co.) in 1891, and, with the exception of about one year spent with the De La Vergne Mfg. Co., has been identified continuously with Worthington up to the time of his resignation.

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Lewis L. Bredin, formerly manager of the screen division of the Chamberlin Metal Weather Strip Co. Inc., Detroit, has been elected president. Associated with the company since 1919, he organized the screen department in 1927 and since that time the company has become one of the leading screen manufacturers in the country. Charles H. Bredin, father of the company's new president, was one of the organizers of the company in 1897, becoming its president in 1910 and serving until his death, July 10 of this year.

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Fred C. Doepke, formerly secretary of the Wrought Washer Mfg. Co., Milwaukee, has been elected president to fill the vacancy caused by the death of his father, Fred Doepke Sr.

William F. Disch, treasurer, will take over Mr. Doepke's duties as secretary.

Fred C. Doepke

Charles H. Disch was re-elected vice president.

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P. H. Birckhead has been advanced to general sales manager of the Bucyrus-Erie Co., South Milwaukee, Wis., following the combination of domestic and foreign sales departments.

Carl S. Wagner, formerly a vice president of the Koehring Co., Milwaukee, has become associated with

Bucyrus-Erie as manager of the commercial department in charge of sales promotion, publicity, orders, claims and adjustments and field direction.

M. J. Woodhull has been named manager of large machine sales and J. A. Garber manager of small machine sales; J. B. Birckhead, drill and "Loadmaster" sales; M. F. Keese, dredge sales; R. T. Craig, foreign and export sales; B. F. Johnston, repair sales.

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Wade H. Oldham, vice president of the Republic Steel Corp., and Hugh Morrow, president of the Sloss-Sheffield Steel & Iron Co., both of Birmingham, Ala., have been chosen members of the board of governors of the Alabama Mining institute, to serve for the coming year.

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Ralph Jamison, of the Jamison Coal & Coke Co., Greensburg, Pa., has been appointed chairman of the western Pennsylvania divisional coal code authority, succeeding J. D. S. Morrow, president, Pittsburgh Coal Co., Pittsburgh, recently resigned.

Ross Davis, of the Hillman Coal & Coke Co., Pittsburgh, has been appointed chairman of the marketing committee of the code authority, replacing H. L. Sheppard, also of the Pittsburgh Coal Co.

Died:

HENRY K. BROOKS, 65, president, Capital Iron Works Co. and Steel Fixtures Mfg. Co., both of Topeka, Kans., in that city, Aug. 12. Born in Kettering, Northamptonshire, England, in 1869, he was educated in England and following several years of engineering experience there came to this country. A few years later he went to Topeka to take over management of the Capital Iron Works Co. which he and his brother later purchased. The two shortly thereafter organized the Steel Fixtures Mfg. Co. and Mr. Brooks assumed presidency of that organization. The two companies are reputed to be the largest of their type in Kansas, the latter supplying much of the steel office furniture made.

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Ernest J. W. Muller, chief engineer for the Adams Grease Gun Corp., New York, in that city, Aug. 14.

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Sam Ziegfried, 43, formerly vice president in charge of sales for Motor Products Corp., Detroit, in Beverly Hills, Calif., recently.

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Donald Foley, 32, in charge of distribution for the Oxweld Railroad Service Co., Chicago, subsidiary of the Union Carbide & Carbon Corp., at his home in Chicago, Aug. 24.

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David E. Ferguson, vice president of H. K. Porter Co., Pittsburgh, in Pittsburgh, Aug. 20. He was formerly purchasing agent for the company and became vice president when the firm was reorganized.

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Alfred N. Willsie, 70, president of the Badeker Mfg. Co., Chicago, manufacturer of metallic packing, in Chicago, Aug. 16. Up until seven years ago, when he joined the Badeker organization, he was assistant divisional superintendent for the Chicago, Burlington & Quincy railroad.

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John Faber Hanst, 49, consulting engineer, Yonkers, N. Y., Aug. 16. He began his engineering career in the iron ore fields of northern Michigan. Later he became chief mining engineer for the Andes Copper Mining Co., spending considerable time in Chile. His most recent connection was in a consulting capacity for the Chicago Pneumatic Tool Co.

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Walter H. Donlevy, 71, of the Carter, Donlevy Co., Philadelphia, and a former president and member of the advisory board of the National Wholesale Hardware association, in a Philadelphia hospital, Aug. 22. He served as chairman of the metal branch of the association from 1914 to 1926 and as president from 1926 to 1928, since which date he was a member of the advisory board.

Detroit Iron, Steel Club To Hold Outing Sept. 8

The Iron and Steel Club of Detroit is extending invitations for its annual good fellowship party, which will be held this year at the Indianwood golf club near Lake Orion, Mich., on Saturday, Sept. 8. It is expected that last year's attendance of 160 will be exceeded this year when not only the iron and steel fraternity in Detroit attends, but also steel mill executives from out of town and many invited guests, the latter made up largely of steel buyers located in Detroit.

H. N. Arbuthnot, Allegheny Steel Co., is secretary of the club. Committee chairman are as follows: A. J. Bopp, Bopp Steel Corp., house committee; E. M. Vehmeyer, Joseph T. Ryerson & Sons Inc., golf committee; W. J. Clucas, Rotary Electric Steel Co., prize committee; Earl S. Park, Superior Steel Corp., entertainment committee; A. A. Keally, Sharon Steel Hoop Co., attendance and publicity committee; and C. A. Poxson, Newton Steel Co., reception committee.

Here and There In Industry

PHILADELPHIA STEEL SALES CO., Lincoln-Liberty building, Philadelphia, has been made district sales representative for Titusville Forge Co., Titusville, Pa. The Philadelphia company also represents the Corrigan, McKinney Steel Co., Cleveland; Otis Steel Co., Cleveland; and the Wrought Iron Co., Ludlum, Pa.

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Universal Power Corp., 1718 Clarkstone road, Cleveland, manufacturer of arc welding equipment and supplies, has appointed Silver Welding Service, West Roxbury, Mass., its distributor in the Boston district.

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Republic Steel Corp., Youngstown, O., N. J. Clarke, vice president in charge of sales, has appointed Buhl Sons Co., Adair street, Detroit, its distributor of Toncan metal in the Detroit district. Warehouse stock will be carried at this plant.

□ □ □

Milwaukee Press & Machine Co., 114 East Pittsburgh avenue, Milwaukee, has started production of a new line of bakery machinery, principally bread slicers, the invention of Harry Fritz. A new division, Fritz Bakery Equipment Inc., has been set up to handle this additional business.

□ □ □

Hardie-Tynes Mfg. Co., Birmingham, Ala., has shipped two large motor-driven air compressors to the naval air base and navy yard at Pearl Harbor, T. H. This company is also building a number of high-pressure, four-stage compressors to operate at pressure of 3000 pounds per square inch, for use on naval destroyers to provide air for charging torpedoes.

□ □ □

Combustion Engineering Co. Inc., 200 Madison avenue, New York, has received orders from the navy department, Washington, for boiler and superheater drum equipment for the cruisers BROOKLYN and PHILADELPHIA. This includes 64 welded drums with an option for equipment for one, two or three additional vessels. The cruisers are being built at the Brooklyn and Philadelphia navy yards and the boilers also will be built at the yards.

□ □ □

Charles G. Stevens Co., Monroe and Jefferson streets, Chicago, has been appointed western sales representative for William Jessop & Sons Inc., New York. The Chicago warehouse is carrying a complete stock of Jessop's Sheffield tool and die steels, and a technical staff is available for consultation on tool steel problems. This extension of its service also marks the 160th anniversary of William Jessop & Sons Inc., which in 1774 began the manufacture of crucible steels from Swedish iron.

EDITORIAL

Man-made Laws Invariably Bow to Natural Forces

AT A time when the federal government is in the hands of zealots who believe that American industry is a puppet whose actions should respond to the omnipotent dictate of Washington, it is refreshing to turn to the ordinary influences which, unmindful of the new deal, help to shape the path of industrial progress.

These influences are the result of experience. They take root from man's constant endeavor to improve the materials, methods and tools with which the demands of civilization are satisfied. They are the forces set in motion by changes in public taste, by advancement in science, and by the play of obscure and complex economic trends.

Statistics Show Marked Shifts in Form and Kind of Steel Consumed in United States

For example, consider the marked shifts in steel production caused by these factors. In the July 23 issue, in this column, it was shown that a drastic change is taking place in the form in which steel is being consumed. The trend is definitely away from the so-called "heavy" products—rails, plates, shapes and bars—and is toward the lighter, flat rolled products—sheets, strip and tin plate. Moreover, this shift, while apparent for several decades, was intensified during the recent depression years.

The transformation in relation to the form in which steel is consumed is accompanied by a similar shift in the kind of steel consumed. As shown in detail on page 25, the trend is definitely toward alloy steel.

From figures which record the first quarter century of the alloy steel industry in the United States, it is apparent that this newest, important kind of steel is traveling a path in relation to carbon steel which is somewhat similar to that of carbon steel in relation to wrought iron, or of open-hearth steel to bessemer steel. Whether or not alloy steel eventually will eclipse ordinary steel, as carbon steel eclipsed iron, or as open-hearth overtook bessemer, is for the future to decide. To date the record hints strongly of the likelihood that alloy steel will encroach steadily upon preserves once sacred to carbon steel.

The best year for alloy steel in point of tonnage was 1929, when the output was 3,957,207 tons. This was 7.01 per cent of the 56,433,473 tons of all kinds of steel produced. The percentage dropped to 6 per cent in 1930 and again to 5.61 per cent in 1931. In 1932 it climbed to 5.84 and in 1933 it rebounded to 6.66 per cent, which is only 0.34 per cent from the highest point. In view of the known activity in alloy steels at the present time, it is possible that the statistics for 1934 will show that the proportion of alloy steel to total steel has exceeded the 1929 record of 7.01 per cent.

Force of Intricate Economic Influences Far Outweighs Effect of Government Edicts

These trends in the form and kind of steel produced to meet the demands of consumers are the surface manifestations of forces which cannot be controlled by haphazard, man-made rules under the present form of government in the United States. Such forces are so numerous and their ramifications extend so deeply into the every day life of the nation that they defy regulation by legislative or executive edict in a democracy. Except in a government by absolute dictatorship, such forces cannot be regimented successfully.

The same principle applies in the case of many factors which the present administration at Washington is attempting to control. For instance, NRA has concerned itself with price systems, basing points, wage rates, restrictions upon building of new capacity, etc. While it may compel by law certain actions which will change industrial practice in regard to these factors momentarily, the effect of these laws will be infinitesimal in comparison to the effect of natural, economic forces.

For instance, the trends toward light, flat rolled products and toward alloy steel ultimately will exert a far greater influence upon the location of producing and consuming plants; upon the types of equipment employed; and upon employment, wages, prices, basing points, profits, etc., than all the provisions of all the codes affecting the industrial groups involved by these influences.

Government supervision of industry should take into account the powerful influence of economic laws, and should work with instead of against them. Had this policy been adopted by the administrators of NRA, perhaps the grave mistake of attempting to take in too much territory would not have been made.

THE INDUSTRIAL DIAL

Published in the last issue of each month as part of
The Business Trend Section of STEEL
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FAINT signs of a slight improvement in industrial activity for the closing days of August are visible, but they are not positive enough to warrant the statement that the low point of the summer recession is safely in the background.

The current record of business is indefinite. Here and there are barometers which seem to indicate tangible trends, but when they are placed side by side with other indicators, the resultant picture is confusing.

For instance, consumption of electric power—a fairly reliable barometer of general activity—is being maintained at an encouraging rate. Output in the week ending Aug. 18 was up 0.9 per cent from the preceding week and 1.5 per cent above the output for the corresponding week of last year. Power output has been running consistently ahead of last year's figures, although the margin has been narrow.

On the other hand, revenue freight car loadings—another general barometer—have lagged behind 1933 figures since the week ending June 30. From preliminary reports, it appears that the loadings for the week ending Aug. 18 will be down from the preceding week, and may break below the 600,000 mark, which has been exceeded since mid-April except in the weeks which included Memorial and Independence days.

Automobile production, which may be considered a fair indicator of general purchasing power throughout the country, shows a trend differing only slightly from that of electric power output and car loadings. In the last three weeks of July assemblies were running well over 60,000 units weekly. In the week ending Aug. 4, the total dropped to 58,554, in the next week to 57,539 and in the week ending Aug. 18 to 53,854. A further shrinkage for the week closing Aug. 25 is indicated, with prospect for a lower rate of activity throughout September. This record of motor car assemblies means that the season extended further in the dog days than in normal years.

In contrast to the rather steady trends in these three lines of activity, the curve of iron and steel output is marked by a sharp recession in July—perhaps the sharpest in the statistics of the industry. Output of steel ingots in July was only half of that of June. August production will be lower than that of July.

Where Business Stands

Monthly Average, 1933—100

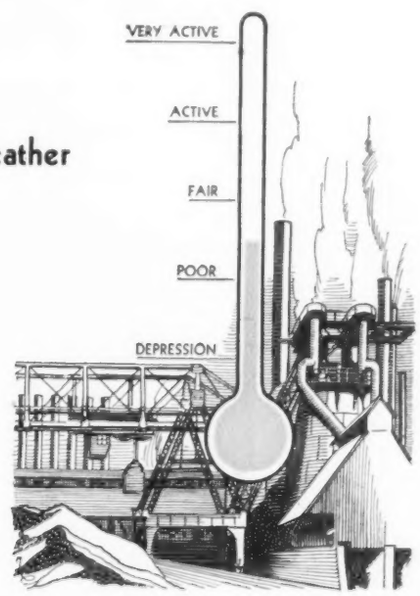
	July, 1934	June, 1934	July, 1933
Steel Ingot Output	79.8	156.9	171.7
Pig Iron Output	109.4	178.2	160.4
Freight Movement	105.3	110.5	111.6
Building Construction	.....	114.1	119.2
Automobile Output	151.4	190.8	141.9
Wholesale Prices	118.6	117.4	114.5

Just how much consumption of steel has been exceeding production since the end of the June quarter is hard to determine. Nevertheless, operations in the lower twenties can scarcely satisfy the needs of present general industrial activity for more than a few weeks. This fact, aside from other considerations, should argue for an upturn in steel output in the near future.

Beyond the printed record of activity are evidences of a mild improvement in business. In the heavy industries an increasing number of long deferred projects involving expansion, rehabilitation and repair are being revived. These jobs are scattered and still far from numerous, yet they are affording new business for some companies whose plants have been operating at extremely low rates for several years.

Although the general situation in industry still is drab, it has an underlying vein of strength which could be tapped easily if the attitude of the federal government were more favorable to industry. There is a growing feeling that the administration inevitably will be forced to make overtures to industry before the fall elections. Any evidence of a sincere return of sanity to Washington would furnish a real stimulus to industrial activity.

Industrial Weather



TREND:

Thumb Nail Sketches Of Business

During the time when sales on the New York stock exchange were at low ebb, the Toronto exchange enjoyed the greatest volume of trading of any market on the North American continent. When the volume at New York was hovering around 500,000 shares daily, that at Toronto was ranging from 750,000 to 1,250,000 shares. However, the bulk of the Canadian trading is in mining stocks, sales of which represent about 97 per cent of total sales. Sales of industrial stocks run about 25,000 shares daily. Recently leading newspapers in the United States have been devoting more attention to the Canadian securities markets.

Sees Improvement in Farm Income

The Brookmire Commodity Bulletin predicts that increased farm income will favor fall business. It estimates a gain in farm income for the 1934-1935 season (July to June) of 15 per cent over last season's figure and 46 per cent over the low point two seasons ago. Benefit and relief payments are not included in this estimate, which takes into account the expectancy that the rise in prices of farm products will more than offset the loss in production.

1934 Auto Output Now Exceeds 1933 Total

The output of 266,575 automobiles in the United States in July brings the total for the first seven months to 1,980,900 cars. This exceeds by 53,644 units the production for the entire year of 1933, which was 1,927,256. On this basis of comparison, the output of trucks made a slightly better showing than that of passenger cars. Production of passenger cars was 1,624,572 for seven months of 1934 and 1,586,338 for all of 1933; of trucks 356,328 for seven months of 1934 and 340,918 for all of 1933.

Equipment Orders Better Than Year Ago

Orders for equipment are running well ahead of corresponding figures for last year, yet the trend is uncertain and the distribution of business throughout the equipment industries is spotty. The July, 1934, index of machine tool orders is up by 72 per cent from the July, 1933, figure, while the index of orders for foundry equipment is up by only 4 per cent. Nevertheless, the figure of 50.7 for July, 1934, is the best showing for July the foundry equipment industry has enjoyed since 1930.

Caused by Man's Folly, Not Act of God

In years to come, economist, delving through the statistics of the great depression, will find the sharp curtailment of steel production in July, 1934, and will wonder what sort of calamity or emergency could precipitate such a sudden change in the operations of a great industry. Output of 3,015,972 tons in June was cut to 1,472,584 tons in July. The rate fell from 52.68 to 26.75 per cent. Probably no rise or fall in the industry's history was as sharp as this. But to the amazed economist years hence, the surprising feature will be his discovery that the sharp change was induced by man-made laws and not by a natural catastrophe or other act of God.

Coke Production Ahead of Last Year; Stocks Down

Coke output dropped 20 per cent in July to the lowest figure since that of June, 1933. The tonnage for July—2,425,459—brings the total for seven months of 1934 to 19,947,906 tons, compared with 14,177,667 tons in seven months of 1933. Stocks at the end of July, 1934, were equivalent to 25.3 days' production, as compared with stocks equal to 45.6 days' production as of July 31, 1933.

The Barometer of Business

Industrial Indicators

	July, 1934	June, 1934	July, 1933
Pig iron output (Daily average, tons)	39,630	64,563	58,108
Machine Tool Index	38.6	42.6	40.4
Finished steel Shipment (tons)	369,938	985,337	701,322
Ingot output (Daily average, tons)	58,903	115,999	126,734
Dodge Bldg. awards in 37 states (sq. ft.)		13,986,500	14,605,600
Automobile output	*255,000	321,956	239,628
Coal output, tons	25,290,000	26,424,000	29,482,000
Business failures, number	912	1,033	1,421
Business failures, liabilities	$19,325,517	$23,868,293	$27,481,103
Cement production, Bbls.		8,786,000	8,609,000
Cotton consumption, bales		363,000	600,143
Car loadings (weekly av.)	586,574	615,640	621,763

*Estimate.

Foreign Trade

	July, 1934	June, 1934	July, 1933
Exports		$167,957,000	$144,197,334
Imports		$135,048,000	$142,991,658
Gold exports		$6,586,000	$85,375,000
Gold imports		$70,291,000	$1,496,000

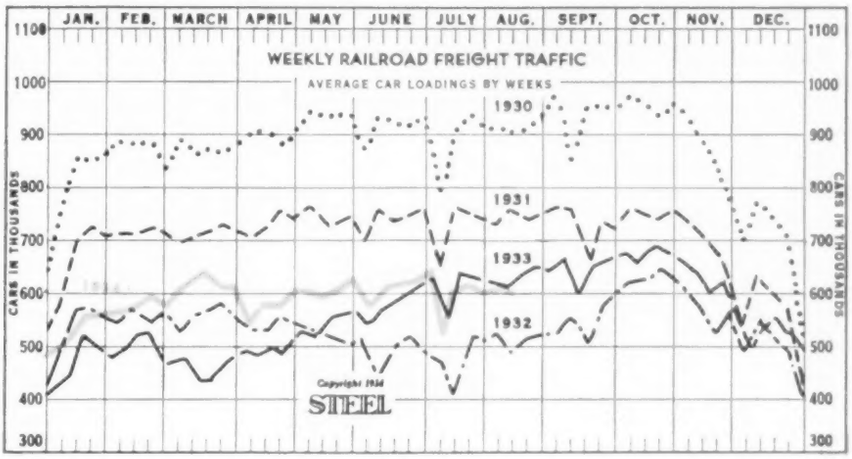
Financial Indicators

	July, 1934	June, 1934	July, 1933
25 Industrial stocks	$131.06	$133.14	$135.84
25 Rail stocks	$31.06	$34.38	$41.09
40 Bonds	$81.55	$82.55	$77.53
Bank clearings (000 omitted)	$18,670,062	$19,597,012	$21,428,987
Commercial paper rate, New York (per cent)	1	1	1¾
*Commercial loans (000 omitted)	$4,445,000	$4,485,000	$4,772,000
Federal Reserve ratio, per cent	69.9	69.2	68.5
Railroad earnings	$41,836,301	$39,494,980	$59,483,185
Stock sales, New York stock exchange	21,115,884	16,802,460	120,300,463
Bond sales, par value	$264,604,200	$267,056,000	$384,014,300

*Leading member banks Federal Reserve System.
**June, May and June, respectively.

Commodity Prices

	July, 1934	June, 1934	July, 1933	Aver. 1913
STEEL's composite average of 14 iron and steel prices	$32.32	$34.89	$29.81	$26.32
Bradstreet's index	$9.32	$9.23	$9.00	100
Wheat, cash (bushel)	$1.07	$1.12	$1.18	92c
Corn, cash (bushel)	77c	73c	73c	51c
Petroleum, crude (Bbl.)		98c	90c	$2.50



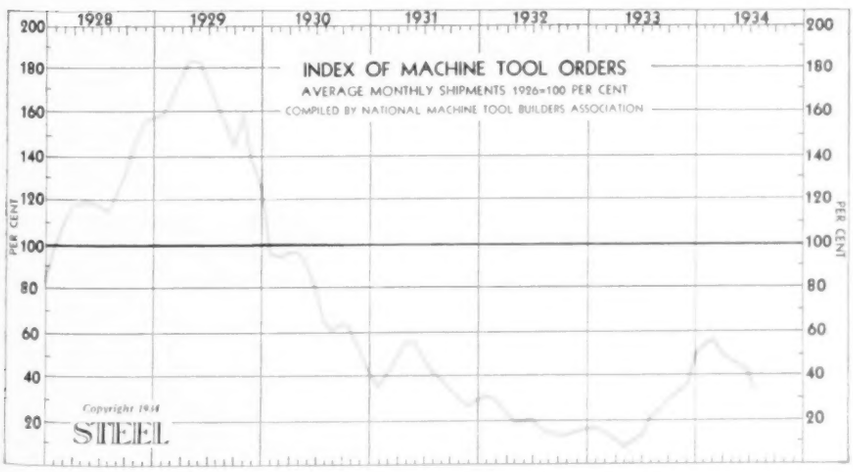
	1934	1933
Aug. 11	602,530	629,743
Aug. 4	611,298	635,655
July 28	608,848	644,839
July 21	614,864	648,914

Freight Car Loadings Continue Below 1933 Level

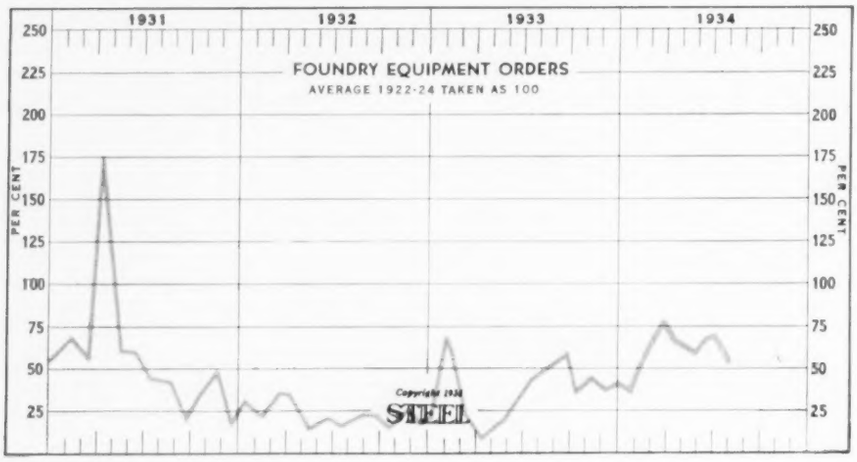
Loadings of revenue freight declined 8768 cars in the week ending Aug. 11, according to the American Railway association, after rising in the preceding week to the highest level since July 21. Total for week of Aug. 11 was 602,530 cars and compares with 629,743 cars in the corresponding period last year. Loadings continue to run under the level of 1933 for the sixth successive week but the decline in the last two weeks has been pronounced. Ore loadings in the Aug. 11 period totaled 29,256 cars, a decline of 914 compared with the preceding week while coke shipments were off 925 cars from the preceding week.

Machine Tool Demand Declines Moderately in July

The index of machine tool orders, based on the volume of shipments for 1926, eased off slightly from 35.3 in June to 34.7 during July. While it was anticipated that orders for the seventh month would continue the down trend of the first half of the year, however, the rate has so slackened that the decline appears to have been checked. The three-month average for July was 38.6, a drop of 4 points from the 42.6 per cent in June and compares with 22.4 per cent in July, 1933. Orders for foreign shipment show a slight improvement over June; the July index rising to 8.4 from 7.9 for the previous month.



	Per Cent
July, 1934	38.6
June, 1934	42.6
July, 1933	22.4



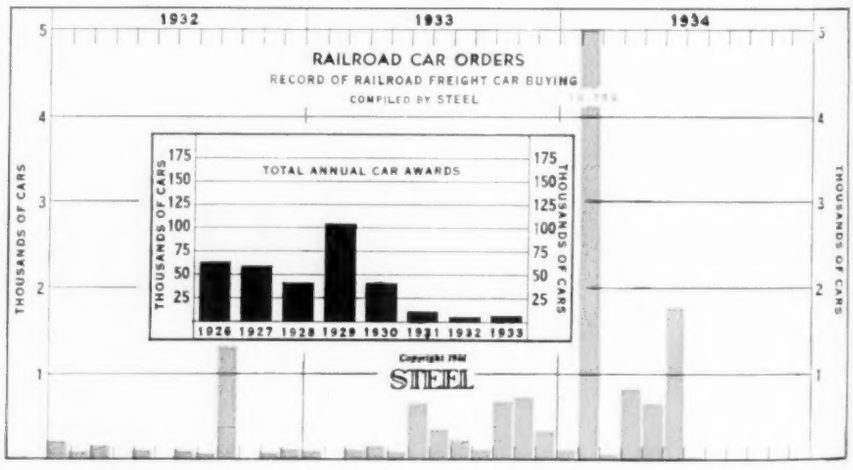
	Per Cent
July, 1934	50.7
June, 1934	70.4
July, 1933	48.6

Foundry Equipment Orders Down In July; Above Year Ago

Foundry equipment makers booked fewer orders in July, according to the latest report issued by the Foundry Equipment Manufacturers association. The index of gross orders declined to 50.7 in July from 70.4 in the preceding month but still was slightly above the 48.6 recorded for July, 1933. The index stood at 18.7 in July, 1932 and registered only 38.7 in July, 1931. Thus, the equipment makers had the best July business since 1930 when the index was 90.6. The index of shipments in July was 67.2 compared with 64.3 in June and 38.3 for July of last year. Unfilled orders as of July 31 was 43.1,a slight drop from the 57.8 of the preceding month.

July Freight Car Awards Lowest This Year

Awards for domestic freight cars dropped sharply in July, totaling only 19 cars. This is the lowest number placed for any month this year and compares with 1835 cars in June and 306 in July of last year. The July figure brings the total for the first seven months to 23,278 cars compared with only 872 during the same period last year. The placing of 100 all-steel phosphate cars by the Seaboard Air Line with the Birmingham, Ala., plant of the Pullman Car & Mfg. Corp. assures a slightly improved outlook for August. In the meantime the railroads are repairing their rolling stock to cope with the present freight demand.



July, 1934	19
June, 1934	1835
July, 1933	306

Millions of Gross Tons and Percentage
Millions of Gross Tons and Percentage
Total Steel Ingots and Castings
Percentage
Total Alloy Steel Ingots and Castings
1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934

Relation of alloy steel output to total steel output for 25 years

A QUARTER CENTURY OF ALLOY STEELS—SIGNIFICANT TRENDS IN 1933

BY EDWIN F. CONE

PRODUCERS of alloy steels—both ingots and castings—have substantial reasons for encouragement and for optimism as to the future of the industry in this country. The American steel industry is now emerging from the worst depression in its history. Despite this fact, it can be demonstrated that the alloy steel industry has made remarkable strides during the depression. An analysis of the annual statistics of the American Iron and Steel institute for 1933, recently issued, is the basis for this demonstration.

This article presents a broad analysis of the official data, covering 25 years, and offers a comprehensive review of the progress of what is practically the first quarter century of the American alloy steel industry. The statistics have been analyzed in four separate tables which reveal the trends in various phases of this important industry.

In Table I is produced the record of the industry for 25 years giving the percentage of alloy steel ingots and castings of the country's total steel output. The peak was in 1929 when nearly 4,000,000 gross tons of alloy steel were made which was 7.01 per cent of the 56,433,400 tons of steel made. This was the record for both totals and the largest percentage of alloy steels. With the depression the percentage naturally fell, first to 6 per cent in 1930 and to 5.61 per cent in 1931, the low point during the depression. From then on the percentage increased until the rather remarkable figure of 6.66 per cent was attained in 1933. In other words, with a total steel output in 1933 only 41 per cent of the record in 1929, the alloy steel production was only 0.35 per cent less last year than in the boom year or 6.66 per cent compared with 7.01 per cent—a truly unexpected and rather astonishing development.

In column 4 of Table I, is a compilation of the tons of total steel to one ton of alloy steel. Twenty-five years ago there were 131.6 tons of total steel to one ton of alloy steel produced. In 1929 this had been reduced to 14.2 tons, which is the record. Despite the depression, which reversed the trend up to this time, the next to the lowest figure in the 25 years, or 15 tons of total steel to one ton of alloy steel, was reached—also a surprising trend. One of the accompanying charts depicts graphically these trends.

Another significant trend in the alloy steel industry during the depression has been the progress made in the production of alloy steels

Table I

Production of Alloy Steel Ingots and Castings in United States

Gross Tons

	Total Alloy Steel	Total Steel	Per Cent Alloy Steel	Tons of Total Steel to 1 Ton of Alloy Steel
1909	181,980	23,955,021	0.75	131.6
1910	567,819	26,094,919	2.17	45.9
1911	481,459	23,676,106	2.03	49.1
1912	792,501	31,251,303	2.53	39.4
1913	714,357	31,300,874	2.28	43.8
1914	646,953	23,573,030	2.75	36.3
1915	1,021,147	32,151,036	3.17	31.4
1916	1,362,615	42,773,680	3.18	31.3
1917	1,644,335	45,060,607	3.65	27.4
1918	1,787,852	44,462,432	4.02	24.8
1919	1,481,188	34,671,232	4.27	23.4
1920	1,660,292	42,132,934	3.94	25.3
1921	809,548	19,783,797	4.10	24.3
1922	1,673,496	35,602,926	4.70	21.3
1923	2,106,489	44,943,696	4.70	21.3
1924	2,026,409	37,931,939	5.35	18.7
1925	2,432,973	45,393,524	5.36	18.6
1926	2,463,414	48,293,763	5.10	19.6
1927	2,531,748	44,935,185	5.59	17.7
1928	3,214,909	51,544,180	6.23	16.0
1929	3,957,207	56,433,473	7.01	14.2
1930	2,443,311	40,699,483	6.00	16.7
1931	1,455,913	25,945,501	5.61	17.8
1932	798,604	13,681,162	5.84	17.1
1933	1,547,183	23,232,347	6.66	15.0

Table II

Production of Alloy Steels Made in Electric Furnaces in United States

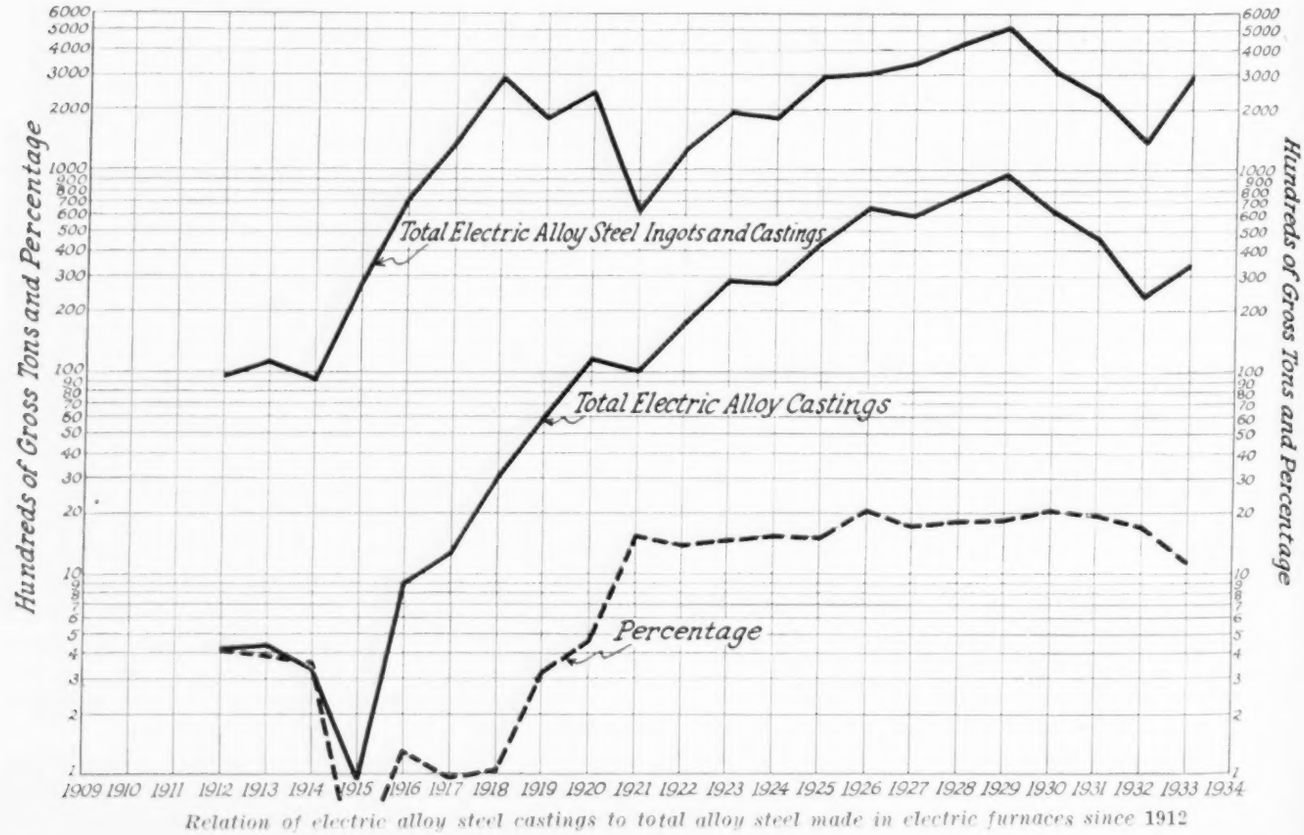
Gross Tons

	Electric Alloy Steel	Total Alloy Steel	Per Cent of Electric Alloy Steel of Total Alloy
1909	.....	181,980	.....
1910	608	567,819	0.11
1911	.....	481,459	.....
1912	9,619	792,501	1.21
1913	11,264	714,357	1.57
1914	9,344	646,953	1.44
1915	27,944	1,021,147	2.73
1916	71,129	1,362,615	5.22
1917	130,578	1,644,335	7.94
1918	290,961	1,787,852	16.26
1919	181,632	1,481,188	12.26
1920	245,572	1,660,292	14.78
1921	63,246	809,548	7.81
1922	125,419	1,673,496	7.49
1923	194,976	2,106,489	9.25
1924	188,563	2,026,409	9.30
1925	293,780	2,432,973	12.00
1926	306,811	2,463,414	12.45
1927	343,517	2,531,748	13.57
1928	433,096	3,214,909	13.47
1929	510,030	3,957,207	12.87
1930	300,520	2,443,311	12.51
1931	232,113	1,455,913	15.94
1932	140,877	798,604	17.65
1933	296,210	1,547,183	19.11

in electric furnaces. In Table II the record for the period under review is analyzed. That electric steel melting has expanded in favor and in use is self-evident from a consultation of the table.

In 1929, the boom year, electric furnaces made 12.87 per cent of the total alloy steel. The record previous to that year was 16.26 per cent in war year, 1918, which is an abnormal comparison. Again here also the effect of the depression was to lower the percentage in 1930 but after that there was a decided expansion in electric melting despite the retarding influence of business conditions. A new high was reached in 1932 at 17.65 per cent but in 1933 the remarkable fact stands out that at 19.11 per cent a new record for all time was achieved.

Several causes account for this trend. At the low point of the de-


Hundreds of Gross Tons and Percentage
Hundreds of Gross Tons and Percentage
Total Electric Alloy Steel Ingots and Castings
Total Electric Alloy Castings
Percentage
1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934

Relation of electric alloy steel castings to total alloy steel made in electric furnaces since 1912

pression—1932—a new record up to that year was made, due in part to the fact that small heats could be made electrically to fill small orders and that the demand for alloy steels was increasing. The same facts apply to 1933. Based on these developments the future of electric melting, in both arc and induction furnaces, is full of promise.

Alloy Steel Castings Fall Off

Looking into the alloy castings developments, the picture is quite a different one—the trends have been decidedly downward during the depression. Table III offers an analysis of the alloy steel castings industry during 25 years, showing the percentage of alloy steel castings of the total alloy steel ingots and castings produced.

Last year 4.63 per cent of the total alloy steel represented alloy castings. This is the lowest percentage since 1925, when it was the same. It is slightly under the 4.87 per cent in 1929. The strange fact is that as the depression progressed the percentages increased over 1929 up to and including 1932. In 1931 a percentage of 6.17 per cent was reached, the highest since 1915—also an unexpected trend and not easy to explain.

The high percentages in the 1909 to 1914 period are a feature of this analysis. Just why they were so high in the early years it is difficult to explain. Possibly the large quantity of alloy steel locomotive frames, which were being made in those years and which are heavy castings, contrasted with the slower development of rolled and forged alloy steels, is the answer.

Table III

Production of Alloy Steel Castings in United States

Gross Tons

	Total Alloy Castings	Total Alloy Steel	Percentage of Alloy Castings of Total
1909	23,002	181,980	12.64
1910	29,357	567,819	5.17
1911	56,290	481,459	11.69
1912	103,109	792,501	13.01
1913	88,927	714,357	12.44
1914	69,846	646,953	10.79
1915	97,896	1,021,147	9.58
1916	56,458	1,362,615	4.14
1917	67,529	1,644,335	4.10
1918	66,485	1,787,852	3.71
1919	45,372	1,481,188	3.06
1920	68,353	1,660,292	4.11
1921	40,255	809,548	4.97
1922	59,104	1,673,496	3.53
1923	92,220	2,106,489	4.37
1924	85,984	2,026,409	4.24
1925	112,583	2,432,973	4.63
1926	146,101	2,463,414	5.93
1927	145,844	2,531,748	5.72
1928	169,684	3,214,909	5.28
1929	192,920	3,957,207	4.87
1930	126,128	2,443,311	5.17
1931	89,903	1,455,913	6.17
1932	41,044	798,604	5.14
1933	71,783	1,547,183	4.63

Electric Alloy Steel Castings

Erratic is the record of the percentage of electric alloy steel castings of the total electric alloy steel—the percentages vary widely during the last 15 years. This is clearly illustrated by Table IV.

Last year, at 11.49 per cent, the percentage of electric alloy steel castings of the total electric ingot and castings production was the lowest since 1920. During the depression this ratio advanced in 1930 and 1931 over the 18.44 per cent in 1929, the boom year to 20.34 and 19.86 per cent respectively, declining in the last two years. The peak of the movement was in 1926 at 20.86 per cent.

The trend in the alloy foundry industry, as revealed in Tables III and IV, follow the developments in the American foundry industry as a whole. The depression has been a serious blow to the demand for all products of the foundries.

Present and Future Factors in Expansion

There are many factors which have contributed and are contributing to the remarkable growth of the American alloy steel industry, particularly in the last few years. One is the demand of various users, especially automobile makers, for many different types of alloy steels. The number and character of these has multiplied decidedly. Then too, there is the increase in the number of alloying elements. Vanadium and molybdenum in particular were by no means as well known 10 to 15 years ago as they are today.

An important influence in this expansion is the rise to commercial importance of the stainless and rustless steels. The character, composition and quality of these have been changing for the better rapidly. Recent years have witnessed a wider knowledge of these steels backed by success in solving many of the problems which have arisen in their application to the oil, chemical and many other industries.

Now comes the trend toward low-alloy high tensile steels—a moderately high tensile grade which can be used "as rolled" for various structural uses in ship, car, bridge and other construction where lighter structural parts can be employed without sacrifice of strength. Moderate resistance to atmospheric corrosion is also involved.

A word should be interjected here in testimony to the role which heat treatment as well as electric melting are playing in this development. Without proper heat treatment, alloy steels are of little value. Without the electric furnace—shaft, arc and induction—this development could not progress.

A plea is also appropriate here for a better definition of an alloy steel. Statistics of today do not present the complete picture because of the conflict in opinion as to whether certain steels are alloy steels or not.

Predictions as to the future are always made with some reservations. From the developments and trends of the 25 years of the alloy steel industry, as briefly depicted in this article, it can be confidently asserted that, based on the progress during the depression, the demand for alloy steels of all types will continue to expand. When more normal conditions return, new records in production, uses and types of alloy steels will be made.

Table IV

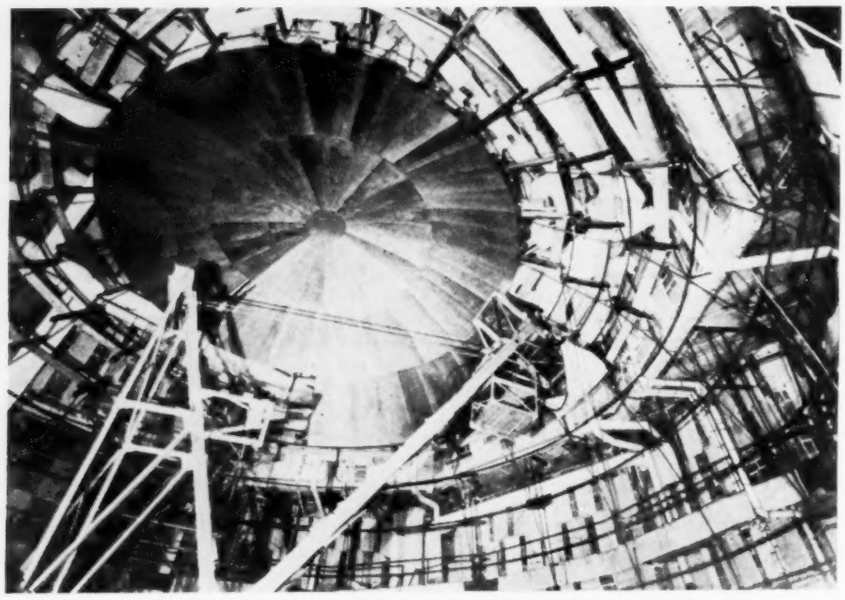
Production of Alloy Steel Castings Made in Electric Furnaces in United States

Gross Tons

	Electric Alloy Castings	Total Electric Alloy Steel	Per Cent Electric Alloy Castings of Total Steel
1909	.....	.....	.....
1910	8	608	1.31
1911	.....	.....	.....
1912	402	9,619	4.18
1913	443	11,264	3.93
1914	340	9,344	3.64
1915	96	27,944	0.34
1916	926	71,129	1.30
1917	1,296	130,578	0.99
1918	3,076	290,961	1.05
1919	6,057	181,632	3.33
1920	11,710	245,572	4.77
1921	10,084	63,246	15.94
1922	17,760	125,419	14.20
1923	29,054	194,976	14.90
1924	28,821	188,563	15.25
1925	44,406	293,780	15.10
1926	64,003	306,811	20.86
1927	59,157	343,517	17.22
1928	79,434	433,096	18.34
1929	94,067	510,030	18.44
1930	61,240	300,520	20.34
1931	46,086	232,113	19.86
1932	24,112	140,877	17.10
1933	34,014	296,210	11.49

Gas Hose Holders of Steel

Steel supports are being employed at some gasoline filling stations to hold the extra long rubber hoses required for certain types of filling equipment. The hoses are hung on these holders and hence the floor space is kept clear for the unobstructed movement of cars. These holders are made of steel flats so shaped as to form a seat for the hose and the holders in turn are attached to the pumps by brackets made from steel flats.



The Fels planetarium dome in process of assembly showing special jig and several rows of stainless steel sheets welded in place

Perforated 18-8 Steel Sheets Form Planetarium Screen

HIGH strength, light weight and corrosion-proof qualities of 18-8 chrome-nickel stainless steel, together with the development of a new welding process known as shotwelding, have opened up new fields for the application of this material. Its use in railway trains, highway trucks, airplanes and naval construction has been described before; a new application in the building arts field is evidenced by the recent construction of a large floating dome for the Fels planetarium in the Franklin institute, Philadelphia.

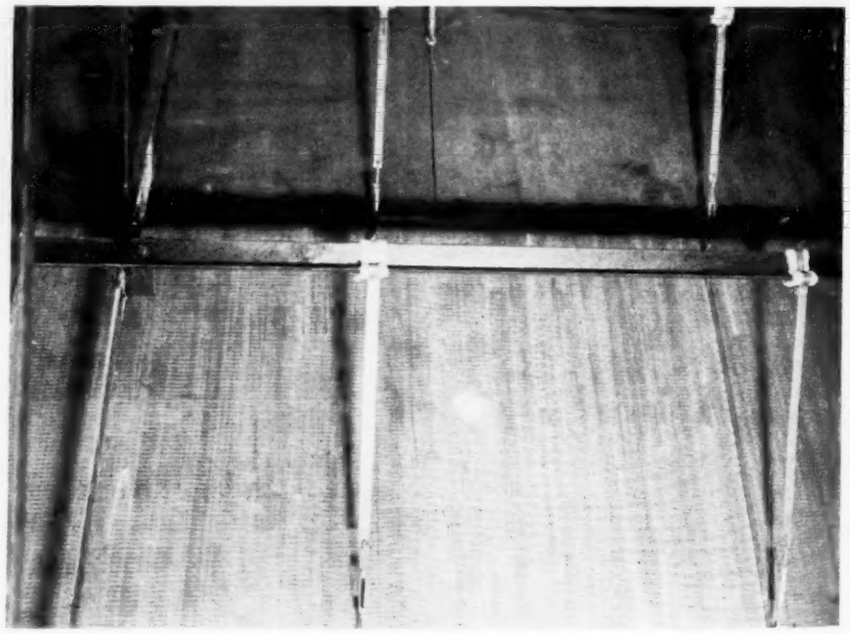
Second Project Larger

This dome was covered on the inside with stainless steel sheets, hung from structural members and joined by the shotwelding process of the Edward G. Budd Mfg. Co. The Budd company's engineers, in co-operation with Franklin institute, designed and built the dome. So successful was the result that a similar but larger dome has been projected for the Hayden planetarium in the American Museum of Natural History in New York.

The Fels dome is a 65-foot hemisphere upon the interior surface of which the 2000-odd visible stars are projected in motion from a large stereopticon machine developed by the world-famous Zeiss optical works. As the demonstration proceeds a lecturer explains to the audience various features of position and movement of the heavenly bodies. The dome in reality is a miniature and mechanically controlled night sky, with all details carried out accurately even to reproducing the skyline with its various buildings and stacks in miniature. An accompanying illustration shows the appearance of the planetarium in action.

Two essentials of the interior surface are high reflectivity and sound deadening properties, the latter to avoid any echo from the lecturer's voice. Exhaustive tests by engineers showed that steel sheets about 1/32-inch thick and perforated with 4300 1/16-inch holes per square foot would permit 97 per cent of the sound to pass through to be absorbed by accoustical material on the walls behind, and yet provide a smooth projection screen. Spraying the inner surface of the steel with light-reflecting paint provided reflectivity.

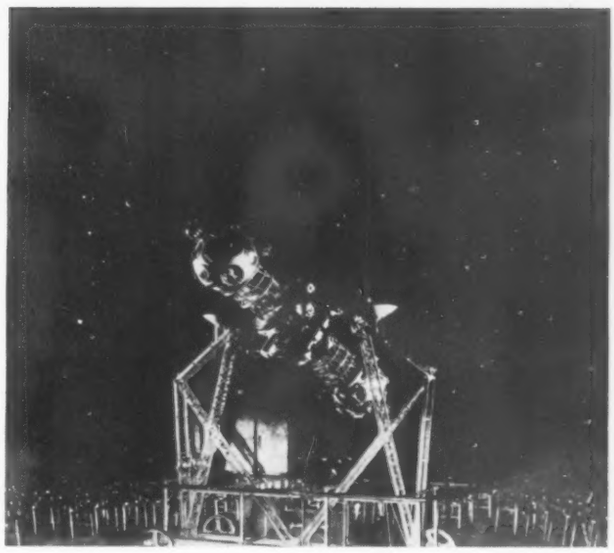
A novel method of stiffening the



View from behind the perforated steel screen showing details of how it is suspended from the structural members

sheets and suspending the dome, so that when completely welded its 11,000 pounds are practically self-supporting, was evolved.

To assemble the dome a jig was designed, consisting of a boom which could be rotated, raised or lowered without changing its radius more than a few thousandths of an inch. On the end of the boom was affixed a welding plate shaped to the curvature of the dome, which located the preformed sheet while the welding was being done from the outside surface.



PLANETARIUM in action. The equipment in the center is the stereopticon machine which projects images of stars and planets on the dome of the darkened hemisphere. Note how skyline details are carried out around the base or horizon

Solder Fittings Find Wider Use

SOLDER fittings, which have gained wide acceptance in making pipe joints in the building field, are being utilized to some extent in making joints in pipe lines on various kinds of fabricated assemblies.

An Ohio manufacturer of heavy-duty, air-cooled air compressors, utilizes a pipe-coil for cooling the compressed air prior to its delivery to rock-drills and other tools driven by these compressors. As a result of tests with 50 compressors, this manufacturer now makes these coils of copper tubing with solder joints. These joints have been found to withstand successfully the vibration which attends the operation of these machines.

A large Michigan user of hydraulic presses is using a copper pipe line provided with solder joints, this line customarily operating at hydraulic pressure in the neighborhood of 2000 pounds per square inch.

Such lines also are being used to provide for the lubrication and cooling of various kinds of metalworking machines and other machinery. With ordinary solder, the joints withstand a condition represented by 125 pounds of steam pressure. They may be formed with silver solder which will stand higher temperatures and pressures. The limit is reached at 900 degrees Fahr. at which point copper tubing starts to anneal.

A feature of interest is the fact that the navy is utilizing such lines extensively in equipping submarines and other vessels in which weight must be kept at minimum.

Molybdenum Die Steel Has Long Life in Can Making

A can manufacturer has effected notable economies through the use of a chromium-molybdenum-vanadium non-deforming, deep-hardening steel for blanking dies for tin plate. This steel contains 12.50 per cent chrominum, 0.80 to 1.00 per cent molybdenum, 1.00 per cent vanadium and 1.60 per cent carbon. For blanking can ends of various sizes, the dies are of the double type producing two pieces per stroke; the automatic presses make 18,500 ends per hour. The dies are good for 3,500,000 end blanks between regrindings and can be reground eight times with one complete reworking between the fifth and sixth periods of use. Total die life averages 35,000,000 can ends.

The steel formerly used, and handled the same as the new steel, contained 12.50 per cent chromium, 2.25 per cent carbon and no molybdenum or vanadium. Life between regrindings averaged only 1,000,000 blanks and total production per set was thus 10,000,000. Regrindings were at the rate of 500 a year, as compared with only 143 with the chromium-vanadium steel.

Die cost with the new steel is $1.86 per million can ends; cost with the former steel was $6.50 per million, the saving being $4.64 per million, or 71 per cent. It is estimated that the net annual saving in direct die cost due to the improved steel is $2320, with press time reduced proportionately. Total saving is 1071 press-hours a year.

GAGE EXPERT INSPECTS BRAIN CHILDREN: C. E. Johansson, world-famous creator of Johansson precision gages, inspects the display devoted to his gages at the Ford exposition in A Century of Progress. Ford Motor Co. has exclusive rights for North and South America to manufacture these gages, some of which are accurate to one-millionth of an inch

High-Strength Die Casting Alloy Is Introduced

A new die casting alloy, known as Brastil and reported to have greater strength and hardness than ordinary copper alloys exhibit; high resistance to fatigue, shock and corrosion; good bearing qualities; and a pleasing, pale gold appearance, has been developed by the Doehler Die Casting Co., Toledo, O. The alloy contains more than 81 per cent copper.

Physical properties, according to the manufacturer are: Tensile strength, 85,000-90,000 pounds per square inch; yield point, 60,000-70,000 pounds per square inch; elongation in 2 inches, 8-15 per cent; brinell hardness, 160-180; and weight per cubic inch, 0.29-pound.

The material can be cut, drilled, reamed, tapped and turned with the same facility as other metals of like hardness and toughness, it is said. Its resistance to acids, alkalis and salts is claimed equal to that of any other copper alloy.

The manufacturer suggests that many parts now made of steel can be made to advantage of this new alloy. Included in this category are such parts as automobile seat supports, tire brackets, door strikers and tie-rod brackets.

These bull plugs, headers and reducers were Multi-Flame welded

Three-Flame Head Cuts Pipe Welding Cost One-Fourth

AN IMPORTANT improvement in the oxyacetylene process for pipe welding, first announced in January, 1931, is a new multi-flame Lindewelding head. Developed and rigorously tested in the overland pipe line field this new head, used with proper technique, effects savings of more than 25 per cent in rods and gases and about 33 1/3 per cent or better in welding time, as compared to single-flame Lindewelding. It is found to permit easier handling of all field conditions, including jammed joints, excessive spacing and high-low line-ups. The multi-flame head is designed for making rolling pipe welds but is not recommended for bell-hole or position tie-in welds.

This new multi-flame head consists of a special chromium-plated tip and a stem for use with Oxweld W-17 or W-22 blowpipes. Its radical departure is the design of the tip to give three flames: A main welding flame and two smaller auxiliary flames, the latter positioned so as to preheat both edges of the vee ahead of the point of welding. Three sizes of heads are available, their use depending upon the pipe size. Special Lindeweld process rod should be used.

Technique Is Modified

Technique to be used with the new multi-flame head is essentially the Lindewelding technique with certain modifications. Because the auxiliary flames now bring about preparation of the base metal more efficiently, the normal single flame Lindewelding technique is modified to the extent that, while the general angular position of the blowpipe and rod with respect to the surface of the pipe is retained, the blowpipe motion is changed so that the main flame is directed more on the rod and less on the bottom of the vee. The preheating flames are positioned so that complete fusion and penetration can be obtained with the main flame. Tack-welds and "seal-offs" are so prepared by the auxiliary flames that no difficulty is experienced in obtaining 100 per cent weld quality for the entire circumference of the joint.

Movement of the rod is limited strictly to a straight-line backward and forward motion, the relative motion of the rod and blowpipe being an "accordion" movement. There should be no side or circular movement of the rod. For normal line-up and spacing, this movement will amount to between ¾ and 1-inch. The rod is held at an angle of about 20 degrees to a tangent to the pipe surface at the point of welding. There is some latitude in this angle, depending upon the amount of liquid puddle being carried by the weider. Usually the angle of the rod is roughly parallel to the angle or slope of the puddle itself, the puddle sloping from the top finished portion of the weld down to the bottom of the abutting edges of the vee. The movement of the rod is confined to this puddle area, and with the rod held in this position on the forward stroke, that is, the movement toward the bottom of the vee, the rod is arrested about ¼-inch from the front end of the advancing liquid puddle. This is an important element in the technique in that at no time does the rod come directly in contact with the unmelted sides of the vee.

One of the major problems involved in this technique is that of melting down the welding rod at a rate fast enough to keep pace with the base metal preparation. If the rod is given a rotating movement between the thumb and forefinger in order to keep a "point" on the melting end, the rate of rod melting can be materially increased.

The blowpipe is moved similarly in a strictly linear backward and forward motion, the rod and blowpipe together producing an "accordion" movement. The length of this stroke, which varies somewhat with the weight of the pipe, spacing and proper preparation of the base metal, usually ranges from ¾-inch to 1½ inches. The blowpipe should be held so that the preheating flames properly preheat both sides of the vee uniformly. The blowpipe flame makes about the same angle with the pipe as the rod as described above, namely, about 20 degrees to the tangent to the pipe at the point of welding.

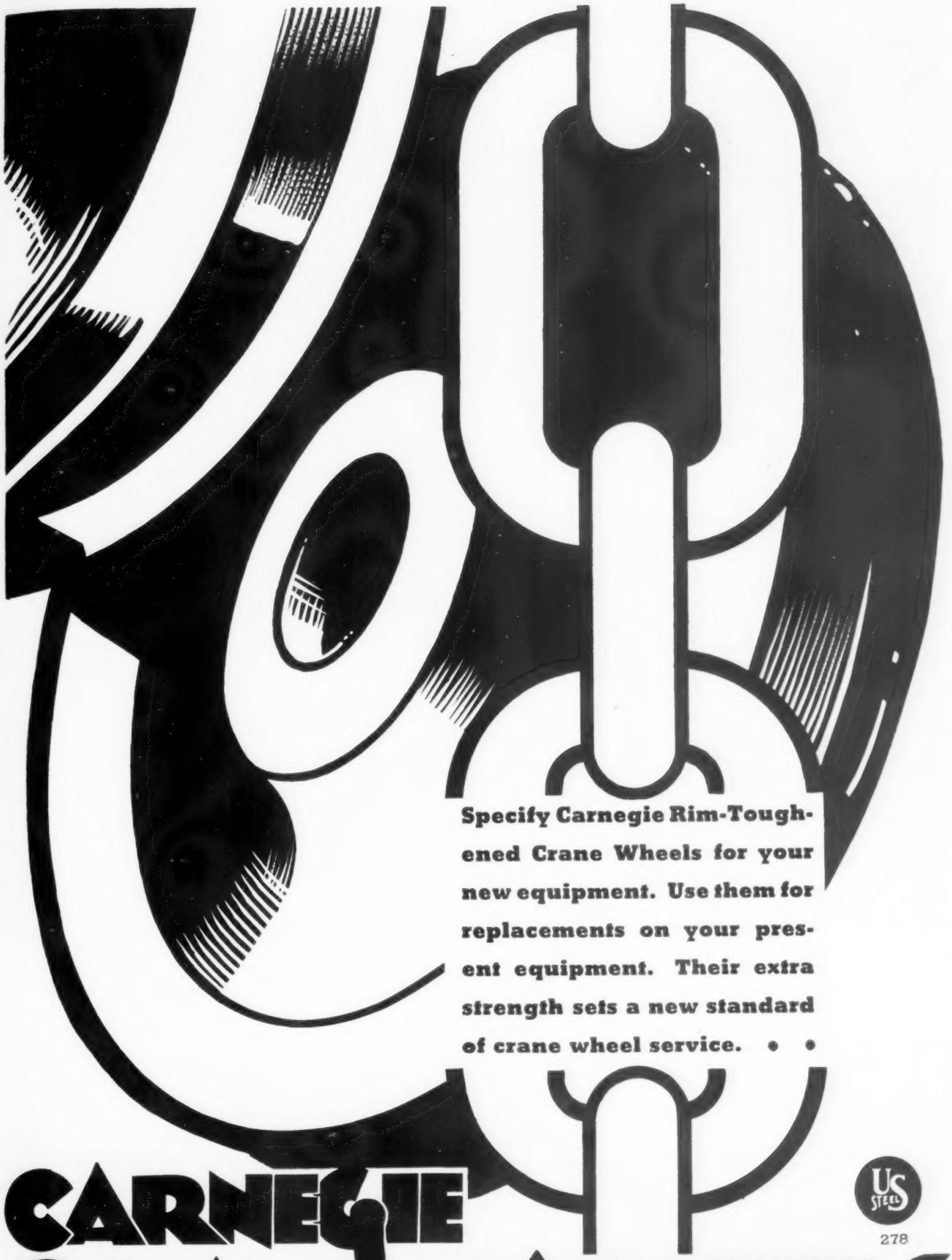
Fusion Depends Upon Preheating

With correct blowpipe manipulation there will be a noticeable preheat ahead of the advancing bottom edge of the liquid puddle and the pipe edges must be melted and prepared for proper fusion usually about 1½ inches ahead of the liquid puddle itself. With equal division of preheat on the abutting pipe edges and sufficient slope of the blowpipe very little time is lost in bringing the red hot edges of the vee to the proper condition for taking the weld metal.

The correct "accordion" movement of rod and blowpipe provides a continual preheating of the rod for each backhand movement of the blowpipe. During this part of the stroke, the inner cone each time is swept up onto the rod, accelerating its melting and preheating it to such an extent that blowholes do not occur. Although the amount of liquid puddle can be con-

Double-lengthing 20-inch pipe with the Multi-Flame head

This article was abstracted from *Oxy-Acetylene Tips*, for August, published by Linde Air Products Co., New York.



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Correct blowpipe manipulation gives a noticeable preheat of the advancing bottom edge of the liquid puddle and the pipe-edges are prepared for proper fusion

sidered as relatively long, that is, ¾-inch to 1¼ inch length, the depth of the puddle is extremely shallow with the consequence that solidification behind the rod occurs progressively from successive shallow layers of metal, thus eliminating the major tendency for blowhole formations which experience has shown develop quite readily in a deep puddle. Occasionally, on extremely old and rusty pipe, there may be a tendency toward pin holes, which tendency can be corrected through reducing the size of the welding flame in order to cut down the superheat in the puddle to as small an amount as practical.

Metal at Bottom of Vee

The preheat and correct technique enable the operator to deposit the weld metal at the bottom of the vee solely by manipulation of the blowpipe. With proper technique, the surface only of the vee is definitely melted. This breaking down of the side walls very rarely penetrates to even as much as 1/64-inch; the bevel melting, however, is a definite fusion process and should not be interpreted from the point of view of a "sweating action."

Where other than normal line-up or spacing occurs, the foregoing technique must be modified to overcome the particular conditions prevailing.

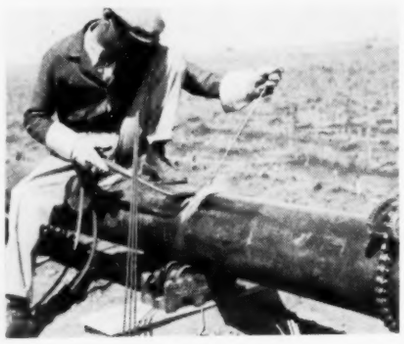
A slight sidewise movement of the blowpipe and rod, in addition to the backward and forward movement, becomes necessary when the spacing is quite extreme—well over 3/16-inch. Normal wide spacing, ⅛ to 3/16-inch, can be handled by the normal technique.

Where the spacing becomes zero, the linear movement of the rod is considerably decreased. At the same time, the length of the stroke of the blowpipe is increased and the flame is impinged more nearly tangent to the surface of the pipe as well as nearer the bottom of the bevel. In other words, it will be necessary to alter the position of the blowpipe head so that the preheating flames are closer to the surface of the pipe and to concentrate the main flame upon the bottom of the abutting edges. With this blowpipe stroke and this position of the flame more of the side walls are melted away, and a portion of side wall material is swept up to the welding rod and puddle. This melting and sweeping away of the side walls continue until the bottom of the weld has been reached.

Already Used on Many Jobs

Already approximately 500 miles of pipe line have been laid down using the new multi-flame head. This pipe has included a wide range of diameters and all tests have shown that exceptionally high strength has been consistently obtained.

One of the most interesting jobs involved the laying of 54 miles of 6 and 8-inch pipe, 30 miles of the former and 24 of the latter. The pipe was 5/16 and ¼-inch wall thickness respectively. The 8-inch section was the first to be laid. The multi-flame head was not available until 14 miles of the line had been laid down. The remainder of the section was completed in three more days, and on this last 10-mile stretch the new tip was employed, resulting in an average of 304.6 welds per day for six welders Test welds were cut from the lines and given the reverse bend test. No welds failed in this test.



Note the three flames made possible by the use of this Multi-flame head on new, 10-inch pipe

Naturally, the marked increase in production made possible by the use of the new welding tip made its use on the longer 6-inch section a matter of course. The pipe was in 40-foot lengths with wall thickness of 5/16-inch and 37½ degree bevel. On this part of the line the six welders averaged nine welds each per hour, or an average altogether of 4 miles per day in spite of sand and long moves. This was an estimated increase of 50 per cent in production over the single flame heads.

Another contractor has been doing considerable work on 10-inch pipe of 11/32-inch wall thickness. On a 42-mile line laying new pipe in 40-foot sections an average of approximately 38 welds per welder day was obtained. There were four welders on the firing line, each working on a string of five 40-foot sections. Each welder and a helper to turn the pipe and also half the time of one man who took care of the generator and cylinders. The record made on this line with the multi-flame head represented a saving of 25 per cent in welding time over the older single flame heads. The line tested with 100-pound air pressure showed no leaks of any sort in the welds.

While the majority of Lindewelding that has been done has been on overland pipe lines where rotation welding is the standard construction practice, this newer welding technique has also been used to great advantage on other types of welding. It has been used on well casings, steel piling, and special racks and frames. Quite recently an extensive piping installation for a large gasoline company in Texas was installed in which the Lindeweld process was used almost exclusively. This included a large system of piping for a new gasoline plant as well as many miles of field pipe to serve over 1000 wells. The pipe ranged from 3 to 26 inches in diameter, with wall thickness varying from 3/16 to 7/16-inch.

Two of the accompanying illustrations show portions of the Lindewelded piping in the plant itself. The entire installation in the boiler house was Lindewelded, using old pipe. Headers, bull-plugs, and certain other specials, were all fabricated and all rotation welding was done using the multi-flame welding head.

Part of a welded pipe installation in a gasoline plant

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Improved Power Factor Cuts Electric Bill 12 Per Cent

Saving enough in power bills in 11 months to more than pay for a capacitator and its installation cost totaling $931, a midwestern steel plant found it had saved $1073 a year after the installation by improving its power factor. A small rack-type capacitator of 80 kilovolt-ampere capacity, placed in an out-of-the-way place, was used. Power bill data indicated a monthly demand ranging from 116 to 140 kilovolt-amperes. The yearly net bill before the installation would have totaled $8766, while the actual year's bill after the installation amounted to $7693, a saving of $1073, or an average of about $89.50 a month.

$ $ $

Plane Wings Covered with Thin Stainless Steel

Stainless steel shortly will make its appearance on airplane wings if experiments now being conducted by an important producer continue as promising as they have in the recent past. Material 0.002 inches thick, over 70 inches wide, and up to 200 feet in length has been rolled successfully, it is reported. Final passes through the cold rolls give this paper thin stainless a beautiful finish. Tensile strength is said to be approximately 170,000 pounds per square inch.

$ $ $

Russian Train Runs on Balls Instead of Wheels

Ball-shaped members of large size are substituted for wheels in a new train developed in Soviet Russia. Instead of running on standard steel rails, the train runs in concrete troughs of semicircular cross section. The inventor claims that trains equipped with steel balls operated in such semicircular troughs may travel safely at higher speeds than now feasible. It is claimed the new cars may safely round curves at 200 miles an hour.

$ $ $

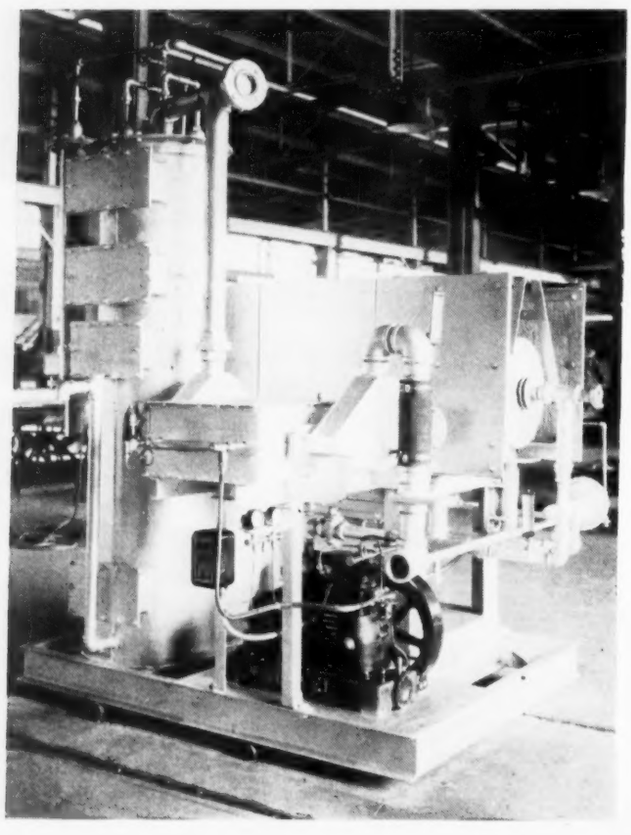
New-Type Hoe Made of Two Metals, Welded

A two-metal hoe recently designed by an agricultural implement manufacturer consists of a shank made from steel which resists shock and fatigue and a blade cut from steel that holds its spring and cutting edge. The shank is of bar steel and the blade is of tempered strip steel. The method selected for joining the two parts is the oxyacetylene welding process, using bronze welding rod.

$ $ $

Recommended Analysis for Alloy Cast Iron Dies

For medium heavy work and relatively deep drawing, such as forming sheet steel into sinks, kitchen utensils, radiator shells, and the like, cast iron

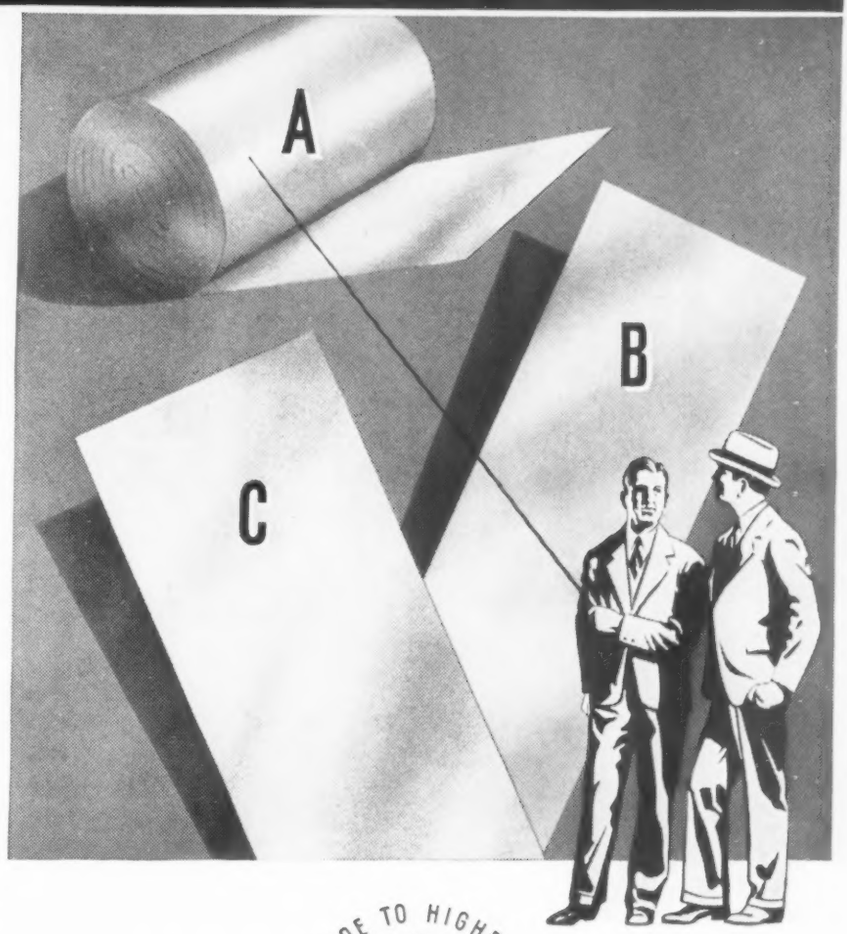


◆

THIS gas preparation unit was installed by a well-known steel mill recently to supply atmosphere gas to box annealing furnaces for annealing steel sheets. The unit is approximately 11 feet in overall height and has a capacity of 8000 cubic feet of gas per hour. It was designed and installed by the Surface Combustion Corp., Toledo, O.

◆

LET'S LOOK AT THE ABC's OF DESIGNING WITH STAINLESS STEELS



A, our first fundamental, stands for ARMCO STAINLESS STEELS, the improved corrosion-resisting metals that offer you a new freedom in designing, fabricating, and endurance of the finished product.

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B stands for better performance; and by better performance we mean stainless steel easier to form, punch, draw, spin and weld. Easier, because ARMCO STAINLESS STEELS are processed scrupulously from ingot to finely-finished sheets, strip, or plates. No pains are spared; no contribution to low-cost fabrication for you is overlooked. You get what you pay for.

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C means corrosion resistance, highly essential to the life and success of your product. Base your design on ARMCO STAINLESS STEELS and be assured of an ample measure of durability. The attractive metal is the same all the way through, as uniform as it possibly could be.

And the surface—stainless steel's first line defense against the inroads of chemicals, acid juices, and other corrosives—is polished with great care and exactness. Beyond this is minute inspection of every sheet.

Call in an ARMCO MAN and discuss with him freely your use or intended use of stainless steel sheets, strip, or plates. It will cost you nothing and commit you in no way. Just direct your inquiry to the address shown at the right.

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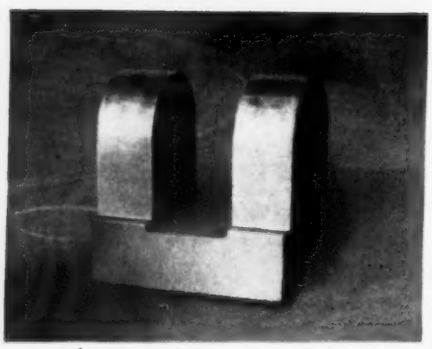


Does this difficult flame-cut piece suggest jobs on which you can save and improve with flame-cut steel plate? Let's talk it over.

Here is one of five big plates we rolled and flame-cut for flywheels. Each plate was 4″ thick, 190″ diameter, weighed over 17 tons, and had a flame-cut center hole 26″ in diameter.

Our customer's specification called for plates "free from laminations, over-rolls, deep seams or other defects." All five plates were accepted by the customer on his first inspection.

On our 206″ mill, World's Largest Plate Mill, we can roll plates for flame-cutting to circles as big as 195″ in diameter . . . sometimes greater through special arrangement.

We can also flame-cut many intricate shapes from wider plates and thicker plates than you can obtain elsewhere. May we show you some interesting pictures of intricate flame-cut shapes that are saving money for their users? Write us today.

At the Iron & Steel Exposition, Cleveland Public Auditorium, September 18, 19 and 20, Visit Our Display in Booth No. 106.

LUKENS STEEL COMPANY

FIRST TO ROLL BOILER PLATE IN AMERICA

COATESVILLE, PENNSYLVANIA

Branch Offices or Agents in

Atlanta Baltimore Boston Chicago Cincinnati Cleveland Detroit El Paso Houston Los Angeles Montreal New York Philadelphia Pittsburgh San Francisco Seattle Syracuse Toronto

dies of the following composition are recommended: Total carbon, 3.00 to 3.40; manganese, 0.60 to 0.90; phosphorus, under 0.30; sulphur, under 0.12; silicon, 1.00 to 1.50; nickel, 2.50 to 3.00; and chromium, 0.60 to 100 per cent.

* * *

While an electric storage battery does not need much attention, it is of vital importance that water be added to it regularly when necessary. Care in connection with this point lengthens the battery life greatly. For instance, a case is reported where a 12-cell battery used to operate a low-lift industrial truck continues to function efficiently after 11 years constant service on this job.

Air Treatment Improves Working Conditions in Auto Body Plant

TO MAKE possible efficient mass production of all-steel bodies, the plant of a well-known automobile manufacturer was equipped last December with what is claimed to be the largest and most modern air conditioning unit in the industry. This unit was designed by the manufacturer's engineers, working in conjunction with engineers of the Surface Combustion Corp., Toledo, O. The body plant engineers incorporated innovations which make for speed and quality in the work as well as safety and comfort for operators. As a result of installing the new apparatus, it is now possible to turn out bodies with a finish superior in both appearance and quality to anything previously achieved.

One of the principal features of the new process is the opening up of spray booths and forming the partitions between them with air. A curtain of air is thrown around each spray booth, making ideal working conditions, eliminating dirt and permitting the spraymen to produce a finish of durability and quality impossible under former methods.

To produce this air curtain each booth requires 20,000 cubic feet per minute of filtered air at a temperature of 80 degrees Fahr. The equipment required consists of an insulated building 75 x 300 feet in size, using 4303 square feet of filtering surface, 196 butane gas burners, 10 intake fans and 114 discharge fans.

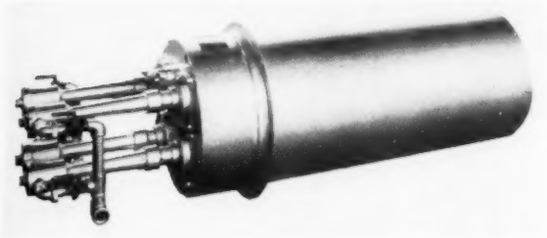
Air is supplied from the suction fans to the point of use through large metal conduits and is removed by discharge fans at the point of use. The volume and temperature of the air are controlled by automatic safety devices, insuring a much more perfect condition than would be possible by manual control.

The air conditioning is divided into two types of requirements. The first of these is for low-pressure air, which is heated to 80 degrees Fahr. and used for air curtains and ventilation. The second is the air used for making or drying the various primer, surfacer or lacquer coats and this requires temperatures up to 250 degrees Fahr. and for enamel work up to 400 degrees. The high-temperature air for these operations is controlled so accurately that ovens 500 feet long having a variation in temperature of not more than two degrees from front to back or top to bottom, a condition of uniformity never before approached. This accuracy in heat control produces high quality undercoat conditions and painted surfaces.

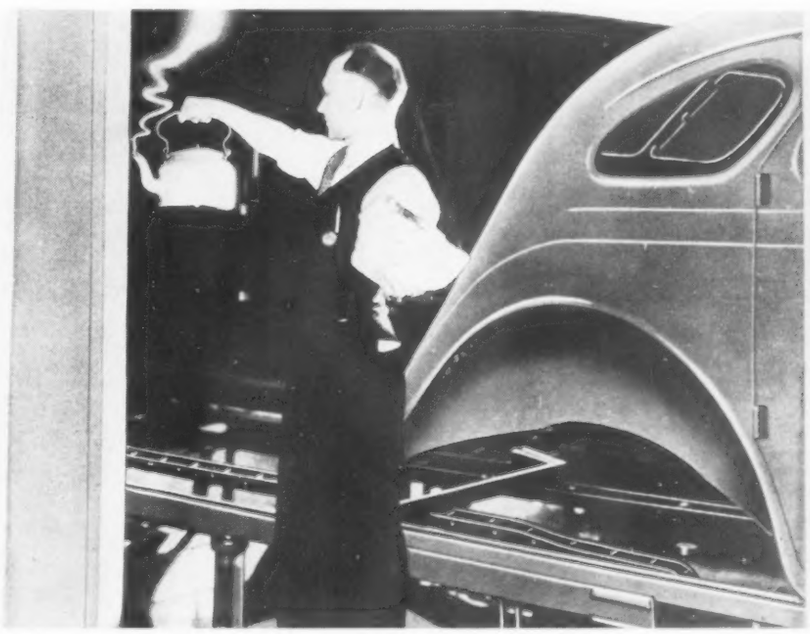
The efficiency of the air curtains is demonstrated by the fact that those used at the ends of the drying ovens seal in a heat up to 300 degrees Fahr. inside the oven while within two feet of the entrance the temperature will be 70 degrees. This extraordinary temperature regulation produces ideal working conditions for the men, who formerly suffered extremely from heat in the summer months. It also eliminates canvas curtains, sliding doors and other apparatus which tend to injure bodies undergoing the process of finishing.

Some idea of the immensity of the air conditioning plant may be had from the fact that its fuel gas requirements are equivalent to those of an average city of 216,000 population. Enough gas is burned in 24 hours to heat 90 five-room cottages for a period of a full month in zero weather.

The capacity of the plant is 1,200,000 cubic feet of air per minute, delivered at a temperature of 80 degrees when the outside temperature is zero. All air delivered to the work has been passed through metallic filters treated with oil.

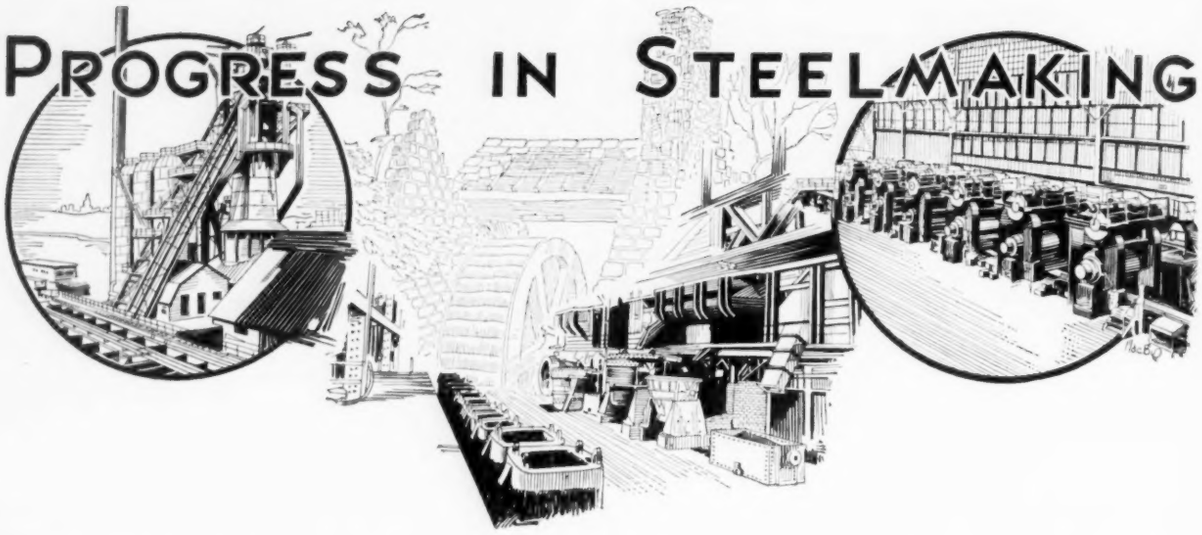


SPECIAL gas burner and equipment for heating high-temperature air used in drying ovens



Illustrating the use of an air curtain in the finishing department of an automobile body plant. The man is standing just outside of the air curtain that closes the entrance to one of the drying ovens. The tea-kettle that he holds in his right hand is in a temperature of 230 degrees; the block of ice in his left hand is in a temperature of 70 degrees, maintained the year round

PROGRESS IN STEELMAKING



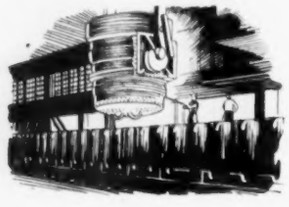
ELECTRIC bell-type furnaces installed at an eastern plant for annealing cold rolled strip have effected savings of $1.87 per ton for high-carbon steel, compared with equipment formerly used. For annealing low-carbon strip the saving amounts to $2.66 per ton and the annealing time, including cooling, is approximately 35 per cent faster than that of the previous method. The annealing cycle for high-carbon stock is about 25 per cent quicker.

♦ ♦ ♦

Nonskid floors were obtained in certain departments of a steelworks by working an abrasive grit in the concrete during its intial set. The grit, 10 mesh and finer, was obtained by passing wornout grinding wheels, polishing stones and heating elements through a brick bat crusher. Approximately ¼-pound of the grit was used for each square foot of surface.

♦ ♦ ♦

Over 5000 ingots have been poured on copper mold stools since experimental work on this type stool was inaugurated. In one test of a copper stool, alligator cracks developed



after 70 heats. These became more pronounced as additional heats were cast until after about 800 heats little walls stood out in bold relief. The stool then was turned over and used on the reverse side; since then 400 additional heats have been taken off. It is expected the stool will show a campaign of 1500 heats.

♦ ♦ ♦

Heavy oil, which no longer is suitable for lubricating reduction gears or bearings, or else tar is employed by many German and Italian steel producers for lubricating the finishing pass of rail and structural mills. The lubricant is applied to the roll surface just before the steel enters the pass either by swabbing or by a funnel. Comparative tests disclose that at least 50 per cent more tonnage can be rolled with lubricated passes without redressing the rolls than when dry passes are employed.

♦ ♦ ♦

Many cast iron standpipes at by-product coke oven plants have been replaced recently by welded steel pipes lined with refractory 2 or more inches thick. Two kinds of refractory are employed; either a plastic which must be rammed into the standpipe mold, or, a fluid which is poured like concrete. The cost of standpipe maintenance has been reduced to a large extent by this construction.

♦ ♦ ♦

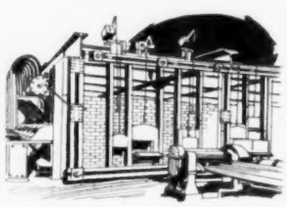
A method of casting steel billets without employing conventional soaking pits and blooming mill has been patented by a steel mill consulting engineer. Several installations in this country and abroad are planned. Billet molds are arranged in the form of I-beams set flange to flange so that three such molds will contain two poured billets. Molds are set in a flat pouring frame with 16 billets capable of being poured simultaneously, with the frame so constructed as to allow for steel expansion, lead-off for gases, etc. Electric, open-hearth or bessemer steel can be poured directly. The method is especially applicable to a small steel producing unit for location close to a large and cheap scrap supply.

♦ ♦ ♦

Sand blasting is effective in removing scale from the blades of steam turbines operated at steel plants, although somewhat destructive. The scale deposition also can be removed by scraping. Or, it can be removed by blowing pulverized coal against the blades. However, a recently devised method is superior to any of the three foregoing methods. The new system involves blasting the scale from the blading with fly ash in a gunite blower. In cleaning the rotor of a 50,000-kilowatt turbine, only two men were required and the job was completed in half the time required by scraping. By this means of cleaning the turbine blades are not worn away.

♦ ♦ ♦

Minute regulation of fuel oil delivered to the burners of open-hearths and industrial heating furnaces is afforded by a newly developed valve. The area of the ori-



fice is increased or decreased by minute increments. Sediment cannot clog the valve even with the smallest opening. As the parts wear the valve is claimed to increase in efficiency.

CHROMIUM
High Carbon Ferrochrome (maximum 6% carbon)
Low-Carbon Ferrochrome (in grades, maximum 0.06% to maximum 2.00% carbon)
Chromium Metal
Chromium-Copper
Miscellaneous Chromium Alloys

SILICON
Ferrosilicon 15% Ferrosilicon 50%
Ferrosilicon 75%
Ferrosilicon 80 to 85%
Ferrosilicon 90 to 95%
Refined Silicon
(minimum 97% Silicon)
Calcium Silicon
Calcium-Aluminum-Silicon
Calcium-Manganese-Silicon
Silicon-Copper
Miscellaneous Silicon Alloys

TUNGSTEN

MANGANESE
Standard Ferromanganese
78 to 82%
Low-Carbon Ferromanganese
Medium-Carbon Ferromanganese
Manganese Metal
Manganese-Copper
Miscellaneous Manganese Alloys

SILICO-MANGANESE
All grades including Silico-Spiegel

VANADIUM
All Grades

ZIRCONIUM
Aluminum-Zirconium
35 to 40% Zirconium
12 to 15% Zirconium
Zirconium-Manganese-Silicon

BRIQUETS
(Patented)
Chrome Briquets Silicon Briquets
Manganese Briquets

SILICO-MANGANESE Simplifies Production

● How Silico-Manganese simplifies "killing the steel" is represented in the following example. A modification of this practice may be adapted for use with any other fuel or type of melting furnace.

The carbon, slag and temperature of an oil fired, basic open hearth furnace are ready to "go ahead." Silico-Manganese is added in sufficient quantity to introduce enough silicon (.10 to .12 per cent) for proper deoxidation of the bath. Eight minutes later the steel is ready to be tapped or further alloyed with manganese or chromium. In this short interval the alloy is completely melted, the carbon drop arrested and the steel deoxidized. Narrow carbon specifications are most easily established when the bath is thus killed in the furnace, but the cleanliness of the finished steel depends upon the use of proper alloys for deoxidizing. Silico-Manganese dissolves immediately upon its addition to the furnace, unites with the oxygen in the bath to form large, light particles of manganese-silicate which rise rapidly to the slag and a thoroughly cleaned steel is the result.

A request from you will bring prices and analyses of the four grades of Silico-Manganese which are carried in stock at all Electro Metallurgical shipping points. Electro Metallurgical engineers will be glad to recommend the grades most suitable to your practice.

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Unit of Union Carbide and Carbon Corporation
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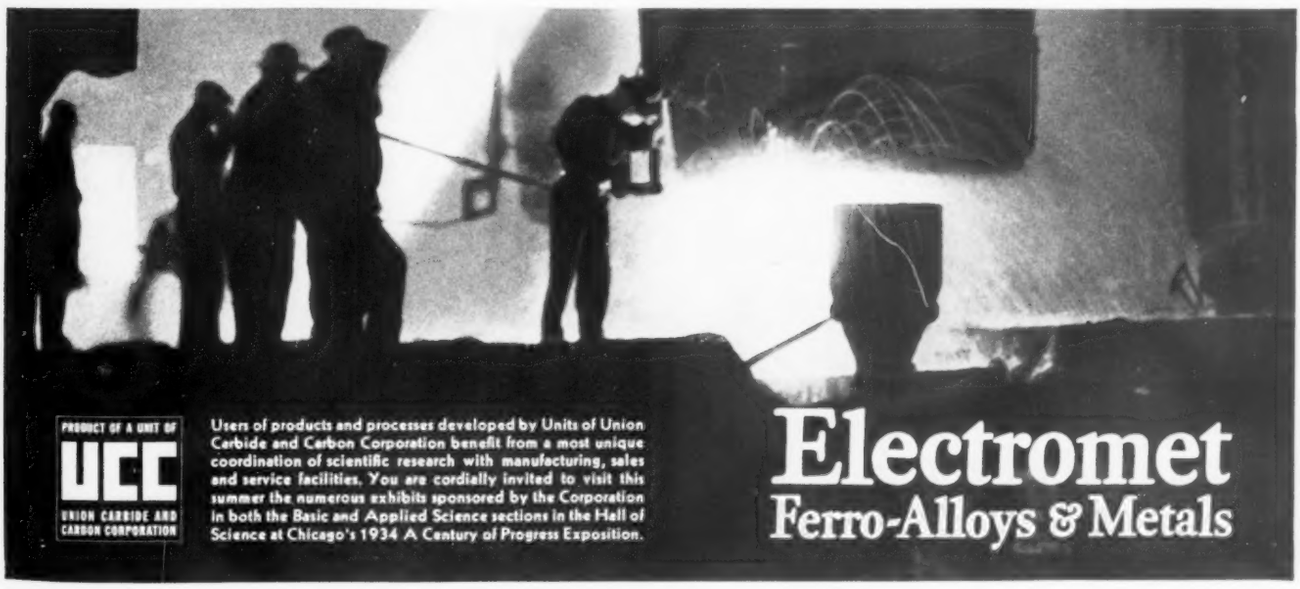
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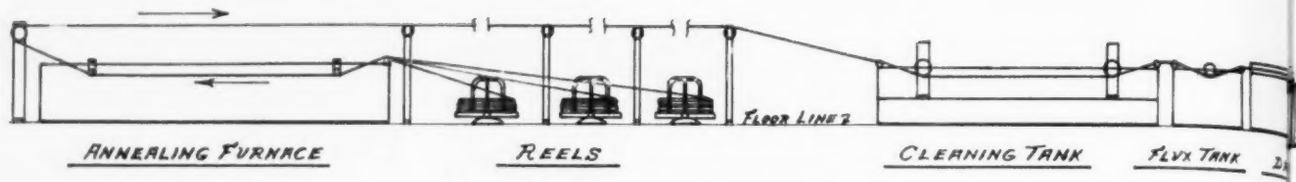
Electromet
Ferro-Alloys & Metals



Diagramatic view of newly developed wire galvanving unit. This includes mechanism for regulating the amo

New Method of Galvanizing Affords Uniform Coating

BY J. L. SCHUELER
Metallurgist, Continental Steel Corp.

METALLIC coatings are legion when considering the number of alloys which can be used. Zinc, however, is almost the universally used metallic coating for wire. The probable reason for this, aside from its relatively low cost, is the fact that it is the most available of the more abundant metals which, based upon the electrochemical theory of corrosion, will best protect the steel base.

Every year millions of dollars are lost because of rusting and corrosion, not only of steel, but many other metals and materials. Rusting usually is associated with the deterioration of iron or steel, either coated or uncoated. The description, which follows, will be limited to the protection of iron and steel wire against corrosion by means of zinc applied by a molten metal coating process, although the process may be used for strip, flat wire and other materials.

Explains Theory of Rusting

The description also will be limited to atmospheric corrosion, which means corrosion taking place in the atmosphere, or air, as differentiated from corrosion in contact with liquid, steam, acids, etc. Corrosion and rusting also will be considered as synonymous words. Several theories have been evolved to explain corrosion but of all these process the oldest, and the one which still survives, is the electrochemical theory. This theory has its weak points but in the opinion of the writer can be used to explain more of the rusting phenomena under varying conditions than can any other theory.

According to this electrochemical theory, corrosion is considered in the nature of a galvannic action caused by the formation of small galvannic cells or batteries between the coating and the base. For example, if a piece of zinc and a piece of iron are placed out of contact with each other in a solution which is an electrical conductor, and the two metals are connected on the outside of the conducting solution to form a closed circuit, a small primary cell is formed, in which the current flows in the solution from the zinc to the iron, and from the iron to the zinc outside of the solution.

By this action the zinc is caused to gradually dissolve and so long as the zinc is present there will be no action on the steel. Corrosion of a zinc-coated wire in the atmosphere appears to take place in a similar matter, and so long as there is zinc present on the wire, the wire will be protected.

Type of Coating Required

Conversely, if a similar battery is made by replacing the zinc with tin, or lead, then the current would flow from the steel to the tin, or lead, and the steel would be dissolved. Consequently, all metals which act towards steel as zinc does, are called electronegative to steel and the materials which act as lead and tin do are called electropositive to steel. Therefore, a metallic coating for steel to be of maximum corrosion resistance should be of an electronegative character.

The main purpose of the zinc coating is to seal the enclosed wire from the air and moisture with a tight and highly impervious material, which itself is sufficiently resistant to corrosion to have a reasonably long life. Other things being equal, a thick coating of zinc will take longer to be consumed by corrosion and so will protect the steel for a longer period than will a thin coating. Another purpose of the zinc coating is to divert corrosion from the steel by its electrochemical action, as has been described.

The rate at which the zinc is consumed, in addition to the weathering action, which would occur with zinc alone, is governed, in considerable part, by atmospheric conditions that are beyond control. This rate also is affected by the area and distribution of the bare spots on the steel. As long as these bare spots are few and small, the burden of protection imposed upon the zinc is diminished. When the zinc is nearly all used up, or, for any reason, the area of exposed zinc increases, the remaining zinc is consumed rapidly. The steel then rusts away at a rate controlled only by its individual rust-resisting properties.

Unfortunately the only manner in which the life of a zinc coating can be determined is by actual test in a specified locality. This result only tells what will happen in that particular locality, and in no other, unless the atmospheric, or climatic conditions, are similar in another locality.

Tests to guide and control the process of manufacture such as the Preece (copper sulphate) test are available, which determines the uniformity of the zinc coating; and stripping tests such as those specified by the American Society for Testing Materials which determine the weight, or amount, of the coating per unit area of metal. However, no accelerated test of any kind are available which will predict accurately the life of galvanized wire under actual service conditions.

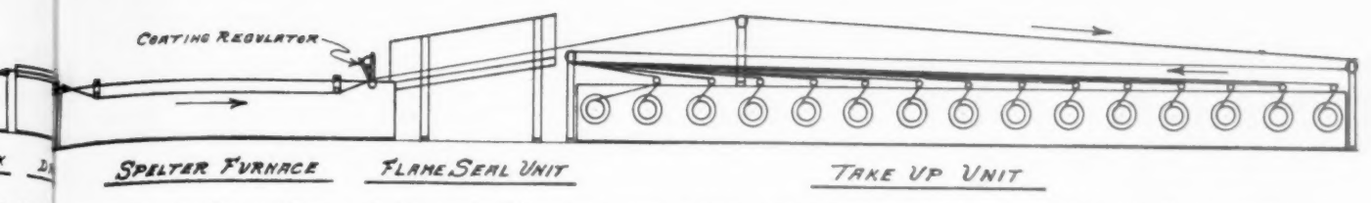
In galvanizing wire there are four steps to be considered, namely: annealing, cleaning, coating and wiping.

Wire, after it comes from the drawing block, is hard, due to the cold working of the steel through the drawing dies. Therefore, before galvanizing, the wire must be softened by annealing if it is later to be subjected to fabricating operations.

How Wire Is Annealed

This is accomplished by passing the wire through a bath of molten lead, or through some other heating medium, at a suitable temperature, the latter varying with the degree of softness required for the wire. A fairly high temperature folowed by a slow cooling produces a soft wire, whereas, the same temperature followed by faster cooling produces a harder wire. Various modifications of heating and cooling may be followed to give the wire the proper degree of hardness or softness.

The surface of the wire must be clean chemically or the adherence of the zinc coating will be impaired. Therefore, the annealed wire is passed into a tank containing a muriatic acid solution maintained at a suitable temperature and concentration to properly clean the surface of the wire. The cleaned wire then



remaining on the surface and for controlling the flame which seals up any pin holes or voids in the coating

is passed through a bath of molten zinc after which, in the ordinary processes of galvanizing, it is wiped. This is done by passing the coated wire between plugs of highly compressed asbestos, or through powdered charcoal.

In principle, the practice of using these wipes is sound enough but it has always been extremely difficult to keep the wipers from removing most of the zinc, especially so with the usual type of asbestos wipes. Even worse, perhaps, is the tendency of the wipes to increase the number, even if they reduce the size, of minute pores, or pinholes, through the coating.

Coatings Frequently Fail

It should be kept in mind that coating metals, particularly in thinly deposited layers, seldom are completely impervious in a chemical and microscopical sense. While zinc coatings are not so susceptible to this condition they are, however, no exception to this propensity. It is one of the problems with which the wire galvanizer must contend.

These points have been thoroughly considered in the development of a new method of zinc coating with which the writer has been connected, called the Flame Sealed process. Various units employed by the new system are depicted in the accompanying illustration and include the annealing furnace, acid tanks, fluxing solution, molten metal coating bath, coating regulator, flame sealer, and take-up frame.

In carrying out this process the wire is annealed, cleaned and coated. After the wire leaves the coating bath it is passed through a highly-developed mechanism called a coating regulator which regulates the amount of coating remaining on the wire. The coating regulator while not a wipe, removes some of the coating, and in this respect performs one of the functions of a wiper.

The coating then is subjected to the action of controlled flame which smooths and evenly distributes the coating around the wire. This flame has another action in that, while smoothing the coating, it seals up any pin holes, or voids, which may be present. This process is being used commercially by the Continental Steel Corp., Kokomo, Ind., and has introduced into wire galvanizing practice a means for producing a uniformly galvanized wire of minimum porosity.

Two A. I. M. E. Divisions Announce Programs for Fall Meetings

TENTATIVE programs for annual fall meetings to be held in New York, Oct. 1-5, in conjunction with the National Metal congress have been announced by the Institute of Metals and Iron and Steel divisions of the American Institute of Mining and Metallurgical Engineers. Headquarters for both groups will be maintained at Hotel Pennsylvania.

Except for joint sessions on Tuesday afternoon, Oct. 2, and Wednesday afternoon, Oct. 3, and the annual joint dinner on the evening of the latter day, the two divisions will hold separate meetings. The joint session on Tuesday will deal with metallography and the one of Wednesday will be devoted to the subject of die casting and other hot working dies. Die casting will be considered in an address at the dinner meeting, with Sam Tour, vice president, Lucius Pitkin Inc., New York, as the speaker.

Among subjects to be discussed by the Institute of Metals division at various sessions will be equilibrium diagrams, die casting and theoretical metallurgy. Subjects for the Iron and Steel division are raw materials, and slag control in the making of iron and steel, the latter taking the form of a symposium which may require two sessions. Ten papers are scheduled for presentation at this symposium.

The complete tentative program is as follows:

Tuesday, Oct. 2

MORNING

Institute of Metals Division

Equilibrium Diagrams

"An Investigation of the Mutual Liquid Solubility of Zinc and Lead with a Determination of the Eutectic Composition and Freezing Points by Thermal Analysis," by R. K. Waring, E. A. Anderson, R. D. Springer and R. L. Wilcox.

"The High Zinc Region of the Copper-Zinc Phase Equilibrium Diagram," by E. A. Anderson, M. L. Fuller, R. L. Wilcox and J. L. Rodda.

"Equilibrium Relations in Aluminum-Nickel Alloys of High Purity," by William L. Fink and L. A. Willey.

"Secondary Structure and the Age-Hardening of Certain Alloys," by K. H. Moore.

AFTERNOON

Iron and Steel and Institute of Metals Divisions

Metallography

"The Orientation of Ferrite in Pearlite," by Robert F. Mehl and D. W. Smith.

"The Use of the Polarizing Microscope in the Study of Inclusions in Metals," by S. L. Hoyt and M. A. Scheil.

"Graphite in Low-Carbon Steel," by A. B. Kinzel and R. W. Moore.

Wednesday, Oct. 3

MORNING

Institute of Metals Division

Die Casting

"Effect of Composition on Mechanical Properties and Corrosion Resistance of Aluminum-Alloy Die Castings," by E. H. Dix Jr. and J. J. Bowman.

"Die Casting of Brass," by John R. Freeman Jr.

"Studies of the Phase Changes During the Aging of Zinc Alloy Die Castings and Their Technological Significance; I—The Eutectoidal Decomposition of the Beta Aluminum-Zinc Phase and Its Relation to Dimensional Changes in Die Casting," by M. L. Fuller and R. L. Wilcox.

"The Role of the Spectrograph in the Control of Die Castings Production," by T. A. Wright.

Iron and Steel Division

Raw Materials

"Genesis and Development of the Blast Furnace from 6000 B. C.," by Charles Hart.

"Manufacture, Properties and Uses of Sponge Iron," by G. B. Waterhouse.

NOON

Luncheon meeting, executive committee of Iron and Steel division.

AFTERNOON

Iron and Steel and Institute of Metals Divisions

Die Casting and Other Hot Working Dies

"Steels for Die-Casting Dies," by Sam Tour.

"Die Casting of Brass," by O. B. Malin and W. W. Sieg.

EVENING

Dinner of Institute of Metals and Iron and Steel divisions. Speaker: Sam Tour, vice president, Lucius Pitkin Inc., New York; subject: "Die Casting."

Thursday, Oct. 4

MORNING

Iron and Steel Division

Slag Control in the Making of Iron and Steel

"Slag Control in the Blast Furnace."

(*Please turn to Page* 49)

—Photo courtesy J. H. Williams & Co., New York

Cold-rolled alloy steel bars are used for better grades of socket wrenches. Ratchet handles usually are forged; sockets are machined

600 Tons of Steel Annually For Socket Wrenches

This brief review of the manufacture of detachable socket wrenches is No. 268 in a series of articles on LARGE USES OF STEEL IN SMALL WAYS.

WRENCHES, one of the most widely used of small tools, for many years have required a relatively large tonnage of steel products in their manufacture. Growing popularity of the detachable socket wrench has helped to expand this steel use and has given increasing importance to this particular type of tool as a steel market, even though drop-forged wrenches of the open end and box types, as well as adjustable wrenches, still are the predominant and most familiar forms to mechanics.

A leading manufacturer of a comprehensive list of industrial wrenches consumed 30 tons of steel in the production of socket wrenches alone during the comparatively quiet year of 1933, and it is estimated that steel requirements of the entire socket wrench industry in an average year would total possibly 600 tons.

Detachable socket wrenches gained their first popularity in the automotive service industry. The ability of these tools to reach inaccessible places, their speed of operation and positive grip, their adaptability due to various combinations of sockets, handles and attachments as demonstrated in the automotive service field have resulted in their wide application to manufacturing and industrial maintenance as well.

Detachable socket wrenches are made entirely of steel and largely from cold-rolled bars. Alloy steel usually is employed for the better grade of product. Ratchet handles are completely drop forged; other accessories, such as extensions, speeders, flex-handles and the like, are partially forged. Sockets and other parts are formed and machined from round, square and hexagonal bars.

Sequence of Operations

A large number of manufacturing operations are involved in the production of a socket, the following being typical of the sequence of the various steps required: Drill, form, knurl, cut-off, broach, recess, burr, stamp, heat treat, sandblast, polish, copper plate, nickel plate, nickel buff and chrome plate.

These wrenches are made in a wide variety of standard sizes. One manufacturer's line ranges from $\frac{5}{32}$-inch opening in its smallest tool, having a $\frac{5}{16}$-inch hexagonal drive, to a 2½-inch opening for its largest wrench, employing a 1-inch drive. Fabrication of these wrenches involves the use of bar stock varying from ½ to $3\frac{7}{8}$ inches in diameter.

Sets of wrenches, with different sizes of detachable sockets, frequently are sold packed in a steel case, as illustrated.

Safety Council Announces Power Press Meeting

The power press section of the National Safety council has announced the tentative program for its annual meeting to be held in Cleveland, Oct. 1-5, in conjunction with the twenty-third annual safety congress and exposition. Headquarters will be maintained in Hotel Statler.

The program is as follows:

Monday, Oct. 1

AFTERNOON

Address of Welcome.

"Our Section—Its Past, Present and Future," by General Chairman A. L. Kaems, Simmons Co., Kenosha, Wis.

"Trend of Accidents in the Power Press Section," by J. D. Lyle, personnel director, Fisher Body Cleveland division, General Motors Corp., Cleveland.

Election of officers.

"Training the New Power Press Operator," by Harry L. Sain, special representative, Industrial Commission of Ohio, Columbus, O.

"Handling and Piling Sheet Steel," by G. S. Thompson, Gnau & Co., Detroit.

Tuesday, Oct. 2

MORNING

Joint Session with Automotive and Machine Shop Section

"Methods Other Than Commercial Safety Devices for Preventing Power Press Accidents," speaker to be announced.

"Supervision and Its Relation to Accidents," by A. D. Byler, vice president and general manager, Edison General Electric Appliance Co., Chicago.

Thursday, Oct. 4

MORNING

Punch Press and Drop Forge Safeguards.

"Drop Forge Operations," by E. J. Wallman, safety engineer, Great Lakes Forge Co., Chicago.

"Heavy and Light Press Operations," by G. F. Oliver, factory manager, J. W. Murray Mfg. Co. division, Murray Corp. of America, Ecorse, Mich.

"Typical Accidents in Our Plant and the Lesons Gained," by S. H. Slaymaker, safety director, Fairbanks, Morse & Co., Beloit, Wis.

Herringbone Gears Gain

A manufacturer of planers reports that it is using more herringbone gear drives in the construction of such machines than ever before. This is done in the belief that this type of drive results in smoother functioning of the machine. This manufacturer uses dissimilar materials. The gear is an alloy steel casting, while the pinion is a steel forging.

NEW EQUIPMENT

PRODUCTION FABRICATION
TREATMENT FINISHING

Power Press—Niagara Machine & Tool Works, Buffalo, has recently added to its line a No. A-3½ inclinable power press. The frame, a semi-steel casting, has sections proportioned so as to obtain maximum strength and rigidity for the given weight and at the same time, the metal is distributed so as to insure solid castings with minimum internal strain. The main bearings in the frame are tied together by webs and constructed so that the pressure from the crankshaft is transmitted directly to the frame. This construction assures accurate alignment and proper lubrication of bearings.

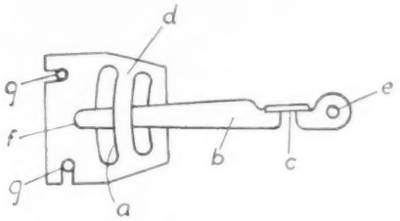
Niagara No. A-3½ inclinable power press has extremely rigid frame

The long slide is guided accurately by two removable gibs securely bolted to the frame and provided with adequate take-up to compensate for wear. Each gib has double V-ways. The ways are lubricated by oil cups on top of the gibs. The slide face and the new ram clamp are constructed to give much better support and additional clamping for punch holders. These presses, shown herewith, are built with the Niagara improved pin type clutch with four engaging points, positive stop to prevent repeating and an indicating arrangement on the brake to show when proper adjustment and operation are obtained.

♦ ♦ ♦

Scratch Recording Strain Gage—Baldwin-Southwark Corp., Philadelphia, recently brought out a scratch recording strain gage which utilizes the difference between the coefficients of static and moving friction. This instrument records deformations below the elastic limit of from 0.0001 to 0.050 inch, over a 2-inch gage length. The device, shown herewith, consists of a target *a* and a scratch arm *b* carrying a special abrasive, held under spring contact with a polished chrome plated recording surface.

Between the clip bar on target *a* and the spring arm is a generous amount of friction. The device is fastened in place on the surface to be strained, with the arm in the center of its line of travel. The arm then is moved over to one or the other side of the target, bending spring fulcrum *c*. The friction is sufficient to prevent the return of the arm to the center under static conditions, but when the distance between the gage points *g* and *e* is changed, the transverse force due to spring *c*, causes arm *b* to move slightly toward the center with each longitudinal slip of the arm under clip bar *a*.



Baldwin-Southwark scratch recording strain gage weighs two grams

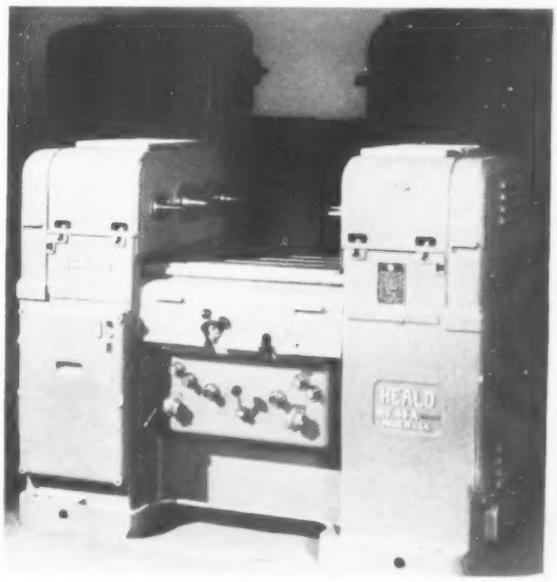
Transverse motion of the scratch arm is regulated by the stiffness of the spring and the friction. The latter can be varied widely by bending bar *a* to a higher or lower level as compared with the level of the target. If several thousand stress variations are to be recorded, and the motion is a simple one in which harmonics are of no interest, the friction can be high and the traverse travel small. If at the other extreme, the problem is one of harmonic analysis, the scale must be opened up to show the details of small deformations.

♦ ♦ ♦

Double-End Boring Machine—Heald Machine Co., Worcester, Mass., recently developed a double-end precision boring machine designated No. 46A "Bore-Matic." This unit, shown herewith, is designed especially for mass production either of an individual part or where a number of operations are to be performed on one piece or where a large number of different pieces can be handled at a single setting.

Bridges have a capacity of four boring heads. While its massiveness alone would absorb practically all normal vibration, particular care has been used in the design to prevent vibration from being transmitted to the boring spindle or work. This includes vibration dampeners under the main drive motor and pump, flexible connection between the pump and the hydraulic system, multiple V-belts and solid heavy castings throughout.

Particular attention has been given to the hydraulic control box which is built up of separate units readily changeable for various functions without disturbing any of the piping. All electrical controls including fusible disconnect switch are mounted in one common cabinet cast in left end of base, with aluminum cover interlocked with switch. A cored passage



ACCURATELY positioned locating buttons are provided on the surfaces of the bridges to serve as locating points for lining up the boring heads of this Heald double-end boring machine. A T-slot is machined in the end of the bridges to provide means for adjustment and the holding of one or more idler pulleys to take care of the slack in the boring head drive

through base is provided for wiring to the motor and to a conveniently located junction box for line wiring. Multiple V-belts drive the boring heads from the clutch and brake units. Boring speeds can be varied easily from 360 to 3270 revolutions per minute by simply changing pulley sizes.

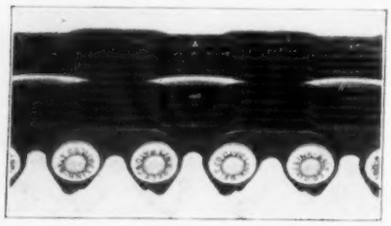
Distance between the bridges on the No. 46A is 33 inches; the standard maximum table travel is 14 inches. Boring stroke at one end of the machine may be as much as 8¼ inches but not more than a total of 13 inches on both ends on the standard machine with 33 inches between bridges. While this gives sufficient room for the usual run of fixtures and work, should more room be required provision has been made for mounting the bridges back for two 2¼ steps on each end to give spacings up to 42 inches between the bridges, allowing considerably more room for fixtures or for room clearance.

The boring heads, three sizes of which are available, are of the solid one-piece body type. The standard head has a spindle with a large flange to which is bolted a suitable size quill that carries the boring tool.

Should it be desired to set up machine as a single end machine, with either short or long stroke, the intermediate stop valve may be set to stop the table for loading just inside the outer reversing point, or dog adjustments may be made to secure positive stop without reversal at outer position.

♦ ♦ ♦

Silent Chain Drive—Link-Belt Co., Indianapolis, announces that it has given a "new dress" to its silent chain drive by bluing most of the chain and treating the washers and guide bars to give them a silvered appearance. The bluing of the bulk of the chain has the effect of placing the silvery parts on a dark blue background, thereby emphasizing the silvery parts. The tradename "Silverstreak" has been adopted. This modernized chain, shown herewith, has a distinctive appearance irrespective of whether it is in motion or lying in stock awaiting installation.

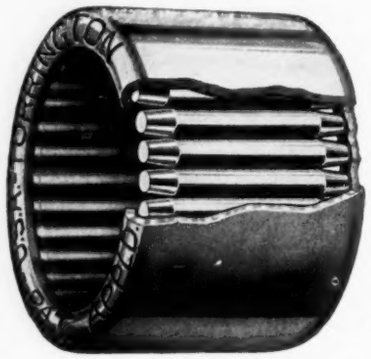


"Silverstreak" silent chain announced recently by Link-Belt Co.

It is made in all standard types, for both industrial first reduction drives and automotive silent timing; viz., side flanged, middle guide, no back bend, and duplex types.

♦ ♦ ♦

Needle Bushing—Torrington Co., Torrington, Conn., is introducing a new needle bushing. The use of needle rollers and the turned-in ends or lip construction of the shell, make



Torrington needle bushing has high radial load carrying capacity

possible a large storage capacity for lubricant. Outside shell is made of drawing steel, cyanide hardened to give a smooth, long wearing bearing surface. Needle rollers are held in place by the unique construction of the shell, without the use of separate retaining rings or washers. These needle rollers are made from high carbon steel hardened throughout to .58 to .60 Rockwell C, and are centerless ground to a diameter tolerance of +0.0000, −0.0002 inch. The circumferential clearance between each roll normally is 0.0001 inch and the total clearance is 0.0005 inch. Either or both of these clearances can be varied to suit special applications. The accompanying illustration shows the unit type needle bushing.

♦ ♦ ♦

Recorder—Bristol Co., Waterbury, Conn., recently brought out an electrical operation recorder which provides a long record on a fast moving round chart. Instead of making one circular record, this instrument draws a spiral curve which starts at the outer edge of the chart and gradually moves toward the center. It is accomplished by a telechron cam which continuously resets the record making movement.

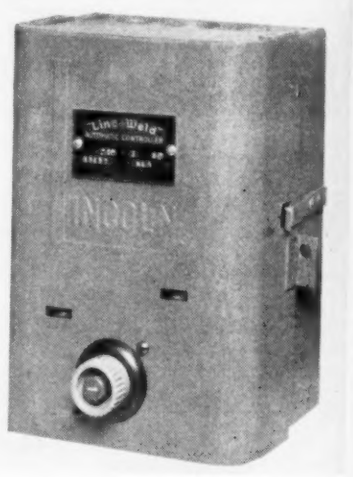
The unit, which is meeting with favor in time study work because it provides an open record with easy filing and ready reference characteristics of the round chart, is fitted with a chart-driving clock that makes one revolution per hour and with a separate telechron motor-driven cam that makes one revolution in eight hours. Resulting record is a spiral curve covering eight rotations of the chart with approximate ¼-inch spacing of the record line. The mechanism which records the trend of an operation is a small electro-magnet that is energized when an external circuit is closed. Movement of this magnet actuates the pen arm. The entire movement is housed in a moisture-proof rectangular model 40-M case.

♦ ♦ ♦

Motor Starters—Lincoln Electric Co., Cleveland, recently announced a new line of automatic motor starters. These units positively prevent accidental starting and permit taking full advantage of the motor's capacity without danger of burning it out. The starter is of the across-the-line type and fully meets underwriter's requirements.

It is impossible to close the starting current unintentionally due to the design of the control. A red stop button extends around and beyond a green start button. Consequently, a bump or fall against the control would move only the stop button. Once the motor is stopped, the only way it can be restarted is by pressing the recessed start button with the fingertip.

Full advantage of the motor's ca-



XLA Motor starter recently introduced by Lincoln Electric Co.

pacity is permitted by an inverse time limit protection which allows carrying a small overload a long time or very heavy load a short time. Immediate motor starting upon resumption of current is insured by low voltage release with two wire control.

The new starters are furnished in three types for different horsepowers and 110, 220, 440 and 550 volts. The

They'll
TELL YOU

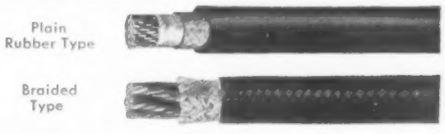
IT'S THE CUSTOM-MADE STEEL THAT SPELLS THE DIFFERENCE!

WELDERS who use Roebling Welding Wire will tell you that it is outstanding for uniformity and freedom from non-metallic impurities. It should be. The steel for this wire is custom-made specifically for welding.

To begin with, only special, pure melting stock is used to make Roebling Welding Steel. Then, small open-hearth furnaces, permitting very close control of the melt, are employed in the exacting refining process. This is far different than making steel on the usual tonnage basis. And, there is a difference in the result.

You will find it worthwhile to send for samples and data on Roebling Custom-Made Welding Wire. It is made in both gas and electric types.

ROEBLING WELDING CABLES: These cables are made in a complete line for arc welding purposes. Many leading welders consider them to be the finest welding cables on the market. Samples, data and prices gladly furnished.



JOHN A. ROEBLING'S SONS CO.
Trenton, N.J. *Branches in principal cities*

ROEBLING WELDING WIRE

Custom Made

XLA starter, shown on page 46, is for 3 and 5 horsepower motors, 110 volts; also 3, 5, 7½ and 10 horsepower, 220, 440 and 550 volts. The XLB starter is for 7½ and 10 horsepower, 110 volts; 15, 20, 25 and 30 horsepower, 220 volts; 15, 20 and 25 horsepower, 440 volts; and 15 and 20 horsepower, 550 volts. The XLBB is for 30 horsepower, 440 volts; and 25 and 30 horsepower, 550 volts.

♦ ♦ ♦

Insulating Fire Brick—A.P. Green Fire Brick Co., Mexico, Mo., recently brought out a new insulating fire brick designated G-25. The material is light in weight (2½ pounds), has excellent spalling resistance and because of inherent radiant qualities reflects heat, preventing it from penetrating furnace walls. Scientifically controlled at every stage of production, this product is a highly porous brick with innumerable noncommunicating cells. Applications include heat treating furnaces, annealing ovens, kilns, and numerous other types of furnaces.

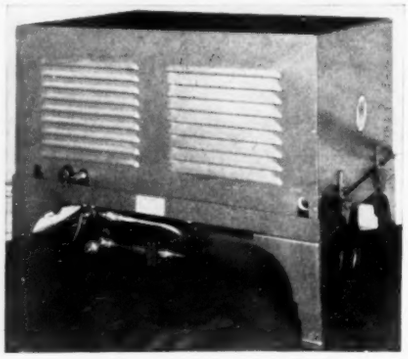
♦ ♦ ♦

Conveyor Chains—Whitney Mfg. Co., Hartford, Conn., recently placed on the market a new line of conveyor chains. As shown in the accompanying illustration, these chains are made in four different sizes and in two types, with standard and oversize rolls. According to the manufacturer, the value of these chains lies in the fact that standard roller chain construction is used, with an extended pitch. Attachments can be bent, welded or riveted to meet a wide variety of requirements.

All steel construction and the use of the extended pitch design provides light weight with high wear-resisting qualities and strength. These conveyor chains are made in two series, 500 and 550. Both series operate over sprockets, but the use of a large diameter roll on the 550 series allows it to be employed as a drag or pressure chain, with the rollers carrying the load.

♦ ♦ ♦

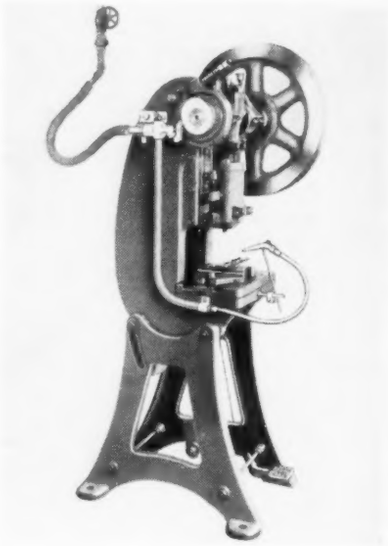
Condensing Units—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recently brought out two new large capacity open-type condensing units to meet a wider range of commercial application. The models are two and three horsepower units, the latter size being shown herewith. Freon is employed for the refrigerant. Use of an oil pump, oil separator, valves in the head, directed flow of air over the compressor, and a compressor with small bore and stroke permitting higher speed of operation with more completely balanced parts and less vibration of the condensing unit, are noteworthy features.



Three horsepower Westinghouse commercial condensing unit

♦ ♦ ♦

Air Valve for Punch Press—F. J. Littell Machine Co., Chicago, recently placed on the market a new type of air valve, shown herewith. A powerful air blast is released by means of a roller running against a cam which is located on the crankshaft of the press. This cam is set so that the air shuts off when the press stops at the top of the stroke. The arrangement makes it unnecessary to change the location of the valve trip each time that an adjustment of the press slide is made.

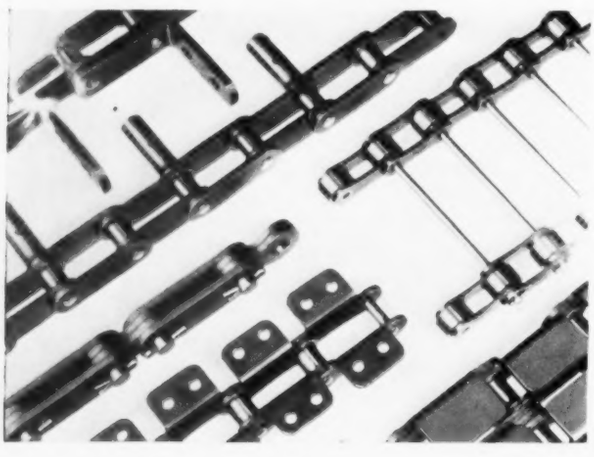


Air valve developed for punch presses by F. J. Littell Machine Co.

A flexible metallic-lined hose connects the air valve with the air nozzle which is supported by a universal clamp that enables the operator to clamp the nozzle at any height, and locate it left or right, front or back, by merely tightening one wing nut. This arrangement is equally adaptable to hand-fed and automatically-fed punch presses.

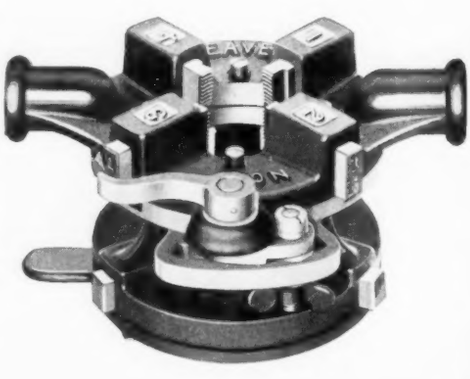
♦ ♦ ♦

Die Stock—Borden Co., Warren, O., recently introduced a new die stock which uses full width dies, adjustable for cutting over or undersize threads of standard size. The unit, shown herewith, is equally suitable for threading iron, steel, wrought iron, brass, copper or aluminum pipe. A die throwout makes it unnecessary to reset dies. Being a non-leader screw type of threader, it is not necessary to reposition the die head. Dies are ground for easy starting.



Left — Conveyor chains developed by Whitney Mfg. Co. are made in four sizes and in two types, with standard and oversize rolls

Right—Drip threads or short nipples can be cut in all sizes of the entire range with this Borden die stock. Each set of dies threads two sizes (except ⅛)



New Trade Publications

WELDERS — Lincoln Electric Co., Cleveland, in a leaflet, welder specification bulletin No. 30, covers its alternating current motor-driven shielded arc welders, types SA300, SA400 and SA600.

ROLLER BEARINGS—A catalog, No. 12, of its self-aligning roller bearings has been issued by Shafer Bearing Corp., 6501 West Grand avenue, Chicago. It is complete with illustrations and specifications.

WIRE PRODUCTS — High-speed steels, tools steel and stainless steels in bars, rods and wire from its Globe wire products division form the subject of a bulletin by the Firth-Sterling Steel Co., McKeesport, Pa.

VENTILATING EQUIPMENT—Hartzell Propeller Fan Co., division of Hartzell Industries Inc., Piqua, O., in a current bulletin covers its line of propeller fans and blowers, with illustrations and tables of specifications.

CRANES AND SHOVELS—Pictures in profusion tell the story of the applications of cranes and shovels manufactured by the Browning Crane & Shovel Co., Cleveland, in a current pictorial. Little text is needed.

RESPIRATORS — Pulmosan Safety Equipment Co., 176 Johnson street, Brooklyn, N. Y., has prepared a bulletin on its line of dust respirators. Descriptions and illustrations of six models are presented and new features are listed.

TRUCKS—Barrett-Cravens Co., 3261 West Thirtieth street, Chicago, has published two bulletins, one dealing with its line of lift trucks and platforms, and the second with storage racks. Illustrations show application of the various pieces.

GENERATING SETS—Troy Engine & Machine Co., Troy, Pa., has issued a bulletin, No. 107, on its generating sets, marine and stationary, direct and alternating current, driven by vertical and horizontal steam engines. It is well illustrated.

FLEXIBLE COUPLINGS — Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has published a bulletin on its new general purpose couplings, designed for use in connection with gearmotors, sped reducers, and other industrial drives.

PUMPS—Duriron Co., Dayton, O., has prepared a new bulletin on centrifugal pumps for acids and alkalies. The bulletin presents details on the general construction of the pumps and discusses briefly the analysis of the different corrosion-resisting alloys in which the pumps are produced.

BRASS DIE CASTINGS—Doehler Die Casting Co., 386 Fourth avenue, New York, has issued a booklet describing its brass die castings with high tensile strength and other desirable qualities. Physical properties are fully described and a comparison given of tensile strength with that of other materials.

PUMPS, COMPRESSORS—Worthington Pump & Machinery Corp., Harrison, N. J., has issued a bulletin on its horizontal duplex piston pumps for general services, handling liquids at pressures up to 250 pounds per square inch. Another bulletin covers its line of steam booster compressors. Both are well illustrated.

ROTARY SWITCHES—A new line of rotary switches is described in a recent catalog of the Roller-Smith Co., 233 Broadway, New York. The instrument switches are designed for use in connection with electrical measuring instruments and the control switches for establishing proper connections to air and oil circuit breakers and other equipment of that nature.

CORE DRILLS—Cores of large diameter and sufficient length to be of commercial value are shown in illustrations in a bulletin by the Ingersoll-Rand Co., 11 Broadway, New York, devoted to its calyx core drills. Cores up to 36 inches are possible to a depth of 200 feet, while with a 2¼-inch drill a depth of 2500 feet may be attained.

BAKELITE ABRASIVE WHEELS—Attainment of unusually high speeds in grinding wheels bonded with Bakelite forms the subject of a booklet by the Bakelite Corp., Bound Brook, N. J. The booklet touches on the historical features of the abrasive industry and devotes attention to the properties of Bakelite resinoids. Some attention also is given to wheels bonded with phenol resinoid.

VIBRATING SCREENS — Link-Belt Co., 910 South Michigan avenue, Chicago, has published a catalog on its line of vibrating screens. Unbalanced-pulley as well as positive drive types of screens are covered, including a positive drive screen for operation at a flat angle, suitable for use in places where the headroom is limited. Several types of dust enclosures are included, with dimensions for laying out an installation.

DRYING OVENS—Ajax Electrothermic Corp., Ajax Park, Trenton, N. J., has published a folder describing the installation of induction drying ovens in the plant of the Chrysler Corp. The unit is used for drying paint, and it is claimed that the equipment operates in such a way that the metal parts are heated by induction as they pass through the oven, therefore evaporating the volatile matter in the paint from the layers next to the metal out.

DESIGN—Design of jigs and fixtures for welding in production fabrication and repair work is the theme of a booklet by the Linde Air Products Co., 205 East Forty-second street, New York. It tells what considerations must be taken into account to realize the saving in costs resulting from the use of these adjuncts. Fundamentals of design are given and their influence on cost reduction discussed. Illustrations and sketches add much to the booklet.

BALL BEARINGS — Bantam Ball Bearing Co., South Bend, Ind., has just completed the engineering section of its anti-friction bearing catalog, the complementary section to those dealing with specific bearing types. It gives detailed illustrated information concerning various methods of bearing application and design of the component parts of various types. A wide range of information is included, illustrated by halftones and line drawings.

CONVEYORS — Conveying of bulk materials horizontally, vertically, up inclines and around curves is described and illustrated in a 16-page catalog of the Stephens-Adamson Mfg. Co., Aurora, Ill. The conveyor-elevator consists of an enclosed steel trough through which is pulled a light skeleton conveying element that causes the material to flow in a solid column. The catalog gives details, sizes and capacities and shows conveyors handling coal, grain, malt, flour, starch, salt, and even face powder.

A.I.M.E. Divisions Slate Metal Congress Sessions

(*Concluded from Page* 41)

"Slag Control for Rimming Steel," by L. F. Reinartz.
"Slag Control for Medium Carbon Forging Steel."
"Slag Control for High-Carbon Steel," by W. J. Reagan.
"Slag Control for Recarburized Rail Steel," by A. F. Miller and T. S. Washburn.
"Slag Control for Alloy Forging Steel."
"Slag Control for Acid Open-Hearth Steel," by F. B. Foley and M. Furness.
"Slag Control for Electric Furnace Steel."
"Chemical and Physical Tests for Slag Control," by C. H. Herty Jr. and A. B. Kinzel.
"Open-Hearth Slags — Their Mineral Constitution."

Institute of Metals Division

Theoretical Metallurgy

"Influence of a Grain Boundary on the Deformation of a Single Crystal," by Richard F. Miller.
"Effect of Quenching Strains on the Lattice Parameter and Hardness Values of High-Purity Aluminum-Copper Alloys," by Arthur Phillips and R. M. Brick.
"An X-Ray Study of Orientation Changes in Cold-Rolled Single Crystals of Alpha Brass," by Carl H. Samans.

NOON

Luncheon meeting, executive committee, Institute of Metals division.

AFTERNOON

Iron and Steel Division

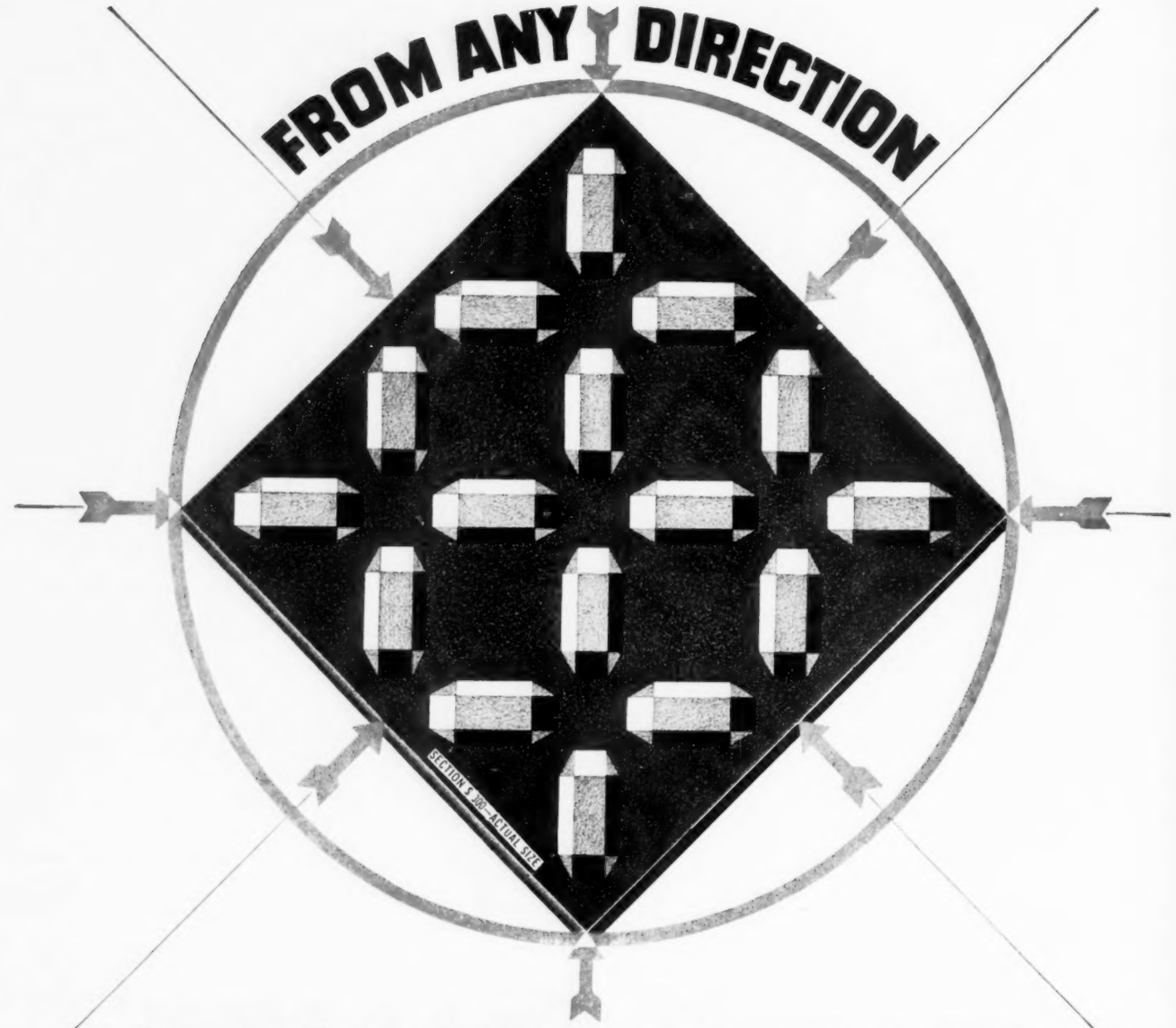
Slag Control in the Making of Iron and Steel

Symposium started at morning session may be continued at afternoon session.

Institute of Metals Division

Theoretical Metallurgy

"Rates of Precipitation in Aluminum-Rich Aluminum-Silver Alloys," by A. Hone.
"Correlation of Equilibrium Relations in Binary Aluminum Alloys," by W. L. Fink and H. R. Freche.
"Intermetallic Solid Solutions," by E. R. Jette.



MULTIGRIP FLOOR PLATE IS NON-SKID

● Note the arrangement and spacing of the lugs on this new product of Illinois Steel Company. This design assures skid resistance at all angles.

- Improved resistance to skid
- Safe—wet or dry
- Comfortable under foot
- Easy traction for wheeled vehicles
- Easy to clean • Drains readily
- Attractive and modern in appearance
- No cutting waste

For protection to life and limb, specify Multigrip Floor Plate

MANUFACTURED BY

Illinois Steel Company

208 SOUTH LA SALLE STREET, CHICAGO, ILLINOIS

SUBSIDIARY OF THE UNITED STATES STEEL CORPORATION

Public Work Awards Heavier; Steel Rate 20½

36,000 Tons of Shapes and Reinforcing Bars Purchased—24 Naval Vessels Placed in Record Time—September Expected To Break Slump—Prices Reaffirned

LABOR day is approached by the steel industry with expectations that it will mark the turning point in the seasonal slump in the markets.

With prices now reaffirmed for the fourth quarter and books for that period to be opened Sept. 1, the belief is strong that the coming month will bring considerable improvement, in spot orders for completing present manufacturing programs, and in contracting for fall requirements.

Currently, the markets reflect only the urge toward further public construction work, 36,000 tons of structural and reinforcing steel being placed during the week, mainly for federal and municipal projects.

Washington's apparent eagerness to expedite construction was indicated when 11 naval vessels were awarded to private yards and 13 to navy yards, within a week—a record time—from the opening of bids. On inquiries from the private yards, which will require 35,000 tons of steel, steelmakers evidently bid the open market prices, regardless of the fact delivery will be extended over two years. Navy yards will take bids in September on 25,000 tons of steel for their allotment.

The automobile industry—always buying some steel—has increased specifications moderately, enabling some sheet and strip mills recently idle to resume production. Extensive shutdowns by automobile manufacturers over Labor day is indicated, with the Ford suspension last Friday as the forerunner.

Automobile Plants Starting to Shut Down For Labor Day; Slow on New Models

In view of business uncertainties, automobile manufacturers are postponing a start on new models, in the meantime making an effort to stimulate current markets and planning to produce such cars as they can sell. Desultory schedules are outlined for the industry in September.

Retrenchment in railroad purchases has been noted ever since the passage of the railroad employes' retirement pension bill. The only new equipment buying in prospect is that of some streamlined passenger trains. Lehigh Valley is seeking a federal loan to repair 2500 freight cars.

All the rails purchased with government loans have now been rolled, and rail mill schedules are down sharply, and are to be suspended in the Chicago district early in September. Dominion Steel & Coal Corp., Sydney, N.S., has booked 7500 tons of rails for South Africa. The Canadian government is projecting plans for financing equipment orders by the dominion railroads.

Standard Oil Co. of California has entered the market for 2500 to 5000 tons of plates for tanks. New York has purchased 3400 tons of cast pipe and Chicago 2228 tons. Included in the heavy finished steel awards were 17,228 tons of reinforcing bars for a government dam at Bonneville, Oreg., and five Pacific coast bridges; 3000 tons of bars for Columbus, O., and 2600 tons for Cleveland. Structural shape awards, 10,385 tons, compare with 12,692 tons in the preceding week.

Tin Plate Production Off 10 Points This Week; Foundry Coke Shipments Heavier

Government buying of cattle for a canning program has not developed in volume, and tin plate production is scheduled to be reduced 10 points to 40 per cent this week. Under the international tin plate sales agreement, just signed, Wales is allotted 55 per cent of the world's market tonnage; United States, 22 per cent; Germany 16, and Italy and France the remainder.

Foundry coke shipments, heavier in August than in either July or June, indicate pig iron consumption has held up much better than production or shipments. The movement of scrap fails to display any marked significance, a reduction of 50 cents on substantial purchases in the East reducing STEEL's iron and steel scrap composite 13 cents to $9.83.

Iron and steel exports in July increased to 233,186 tons from 219,406 tons in June. In July last year they were 83,311 tons. Exports in seven months total 1,486,360 tons, compared with 654,061 in the first seven months of 1933.

Steelworks operations were down 1 point to 20½ per cent last week. At Pittsburgh the rate was off 5 points to 10 per cent; eastern Pennsylvania ½ point to 20; Youngstown, 1 to 21. Chicago advanced 1½ to 29½; Cleveland, 3 to 15. Detroit was unchanged at 77; New England, 29; Wheeling, 26; Buffalo, 23½; Birmingham, 25.

STEEL's iron and steel price composite is off 1 cent to $32.22, while the finished steel index is unchanged at $54.

COMPOSITE MARKET AVERAGES

	Aug. 25	Aug. 18	One Month Ago July, 1934	Three Months Ago May, 1934	One Year Ago Aug., 1933	Five Years Ago Aug., 1929
Iron and Steel Composite	$32.22	$32.23	$32.32	$32.97	$29.92	$36.36
Finished Steel Composite	54.00	54.00	54.05	54.80	47.50	57.93
Steelworks Scrap Composite	9.83	9.96	10.30	11.30	11.57	16.46

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip and cast iron pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

	Aug. 25 1934	July 1934	May 1934	Aug. 1933
Finished Material				
Steel bars, Pittsburgh	1.80	1.80	1.90	1.60
Steel bars, Chicago	1.85	1.85	1.95	1.70
Steel bars, Philadelphia	2.09	2.09	2.19	1.91
Iron bars, Terre Haute, Ind.	1.75	1.75	1.75	1.65
Shapes, Pittsburgh	1.80	1.80	1.85	1.60
Shapes, Philadelphia	2.00½	2.00½	2.05½	1.81½
Shapes, Chicago	1.85	1.85	1.90	1.70
Tank plates, Pittsburgh	1.80	1.80	1.85	1.60
Tank plates, Philadelphia	1.98½	1.98½	2.03½	1.79½
Tank plates, Chicago	1.85	1.85	1.90	1.70
Sheets, No. 10, hot rolled, Pitts.	1.85	1.85	2.00	1.65
Sheets, No. 24, hot ann., Pitts.	2.40	2.45	2.65	2.25
Sheets, No. 24, galvan., Pitts.	3.10	3.10	3.25	2.85
Sheets, No. 10, hot rolled, Gary	1.95	1.95	2.10	1.80
Sheets, No. 24, hot anneal., Gary	2.55	2.55	2.75	2.35
Sheets, No. 24, galvan., Gary	3.20	3.20	3.35	2.95
Plain wire, Pittsburgh	2.30	2.30	2.30	2.10
Tin plate, per base box, Pitts.	5.25	5.25	5.25	4.25
Wire nails, Pittsburgh	2.60	2.60	2.60	2.10
Semifinished Material				
Sheet bars, open-hearth, Youngs.	$28.00	28.40	30.00	26.00
Sheet bars, open-hearth, Pitts.	28.00	28.40	30.00	26.00
Billets, open-hearth, Pittsburgh	27.00	27.40	29.00	26.00
Wire rods, Pittsburgh	38.00	38.00	38.00	35.00

	Aug. 25 1934	July 1934	May 1934	Aug. 1933
Pig Iron				
Bessemer, del. Pittsburgh	19.76	19.76	19.76	18.26
Basic, Valley	18.00	18.00	18.00	16.00
Basic, eastern, del. eastern Pa.	19.76	19.76	19.76	17.20
No. 2 foundry, del. Pittsburgh	19.26	19.26	19.26	17.76
No. 2 foundry, Chicago	18.50	18.50	18.50	17.00
Southern, No. 2, Birmingham	14.50	14.50	14.50	13.00
No. 2X, Eastern del. Philadelphia	20.63	20.63	20.63	17.88
Malleable, Valley	18.50	18.50	18.50	16.50
Malleable, Chicago	18.50	18.50	18.50	17.00
Lake Superior charcoal, del. Chi.	23.54	23.54	23.54	23.04
Gray forge, del. Pittsburgh	18.88	18.88	18.88	17.13
Ferromanganese, del. Pittsburgh	89.79	89.79	90.24	87.24
Scrap				
Heavy melting steel, Pittsburgh	$11.25	12.00	12.80	13.75
Heavy melt. steel, No. 2, east. Pa.	8.00	8.90	9.00	10.50
Heavy melting steel, Chicago	9.50	9.55	10.85	10.40
Rails for rolling, Chicago	10.75	10.85	12.15	11.25
Railroad steel specialties, Chicago	10.25	10.50	12.40	11.15
Coke				
Connellsville, furnace, ovens	3.60	3.60	3.45	2.75
Connellsville, foundry, ovens	4.60	4.60	4.60	3.10
Chicago, by-product foundry, del.	9.25	9.25	9.25	8.25

Steel, Iron, Raw Material and Metals Prices

Prices conform to American Iron and Steel institute schedules. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.85c
Gary, base	1.95c
Chicago, del.	1.98c
New York, del	2.18c
Philadelphia, del.	2.14c
Birmingham, base	2.00c
St. Louis, del.	2.17c
F.o.b. cars, dock, Pacific ports	2.40c

HOT ROLLED ANN. No. 24

Pittsburgh, base	2.40c
Gary, base	2.50c
Chicago, del	2.53c
Detroit, del.	2.60c
New York, del.	2.73c
Philadelphia, del.	2.69c
Birmingham, base	2.55c
St. Louis, del	2.72c
F.o.b. cars, dock, Pacific ports	3.05c

GALVANIZED No. 24

Pittsburgh, base	3.10c
Gary, base	3.20c
Chicago, del	3.23c
Philadelphia, del.	3.39c
New York, del.	3.43c
Birmingham, base	3.25c
St. Louis, del	3.42c
San Francisco, f.o.b. cars, dock	3.70c

TIN MILL BLACK No. 28

Pittsburgh, base	2.75c
Gary, base	2.85c
St. Louis, del.	3.07c

COLD ROLLED No. 10

Pittsburgh, base	2.50c
Gary, base	2.60c
Detroit, delivered	2.70c
Philadelphia, del.	2.79c
New York, del	2.83c
F.o.b. cars, dock, Pacific ports	3.10c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, base	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.24c
New York, del	3.28c

ENAMELING SHEETS

Pittsburgh, No. 10	2.50c
Pittsburgh, No. 20	3.10c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh. Gary base, 10 cents higher

Tin plate, coke base contract	$5.25
Do., stock	$4.90
Long ternes, No. 24 unassorted	3.40c

Corrosion and Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel; sheets 35c; plates, 28c; bars, 24c; hot-rolled strip, 24.50c; cold-rolled strip, 2.00c.

	A	B	C	D
Bars	17c	18.5c	21c	26c
Plates	20c	21.5c	24c	29c
Sheets	25c	28c	31c	35c
Hot strip	17c	18.5c	21c	26c
Cold strip	22.5c	24c	27c	35c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 19/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.80c
New York, del	2.08c
Philadelphia, del.	1.98½c
Boston, del.	2.20c
Buffalo, del.	2.03½c
Chicago or Gary base	1.85c
Cleveland, del.	1.98½c
Birmingham, base	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific Coast, f.o.b. cars, dock	2.35c
St. Louis, del.	2.07c

Structural Shapes

Pittsburgh, base	1.80c
Philadelphia, del	2.00½c
New York, del.	2.05¼c
Boston, del.	2.18¼c
Bethlehem, base	1.90c
Chicago, base	1.85c
Cleveland, del.	1.98½c
Buffalo, base	1.90c
Gulf ports	2.20c
Birmingham, base	1.95c
Pacific Coast, f.o.b. cars, dock	2.35c

Bars

SOFT STEEL

Pittsburgh, base	1.80c
Chicago or Gary	1.85c
Duluth, base	1.95c
Birmingham, base	1.95c
Cleveland, base	1.85c
Buffalo	1.90c
Detroit, del.	1.95c
Pacific Coast ports cars, dock, c.i.f.	2.35c
Philadelphia, del.	2.09c
Boston, del.	2.20c
New York, del.	2.13c
Pitts., forg. qual.	1.95c-2.05c

RAIL STEEL
To Manufacturing Trade

Pittsburgh base	1.70c
Chicago or Gary, base	1.75c
Moline, Ill., base	1.75c
Cleveland, base	1.75c
Buffalo, base	1.80c

IRON

Terre Haute, Ind.....	1.75c
Chicago	1.80c
Philadelphia, base..	1.89c
Pittsburgh, refined..	2.75c-7.50c

REINFORCING

New billet, cut lengths, carlots

Pittsburgh	2.05c
Chicago, Gary, Buffalo Cleve., Birm., Young....	2.10c
Gulf ports	2.45c
Pacific coast ports f.o.b. cars dock	2.45c
Philadelphia, del.	2.34c

Rail Steel

Pittsburgh, base	1.90c
Chicago, Buffalo, Cleveland, Birm., Young.....	1.95c
Gulf ports	2.30c

Wire Products □ □

(Prices apply to straight or mixed carloads; pool cars, or less, 10c up. 10% dis. on nail extras on straight or mixed carloads to one consignee.)

Base, Pittsburgh-Cleveland (Per 100-lb. keg)

Standard wire nails	$2.60
Cement coated nails	2.60
Galvanized nails, 15 gage and coarser	4.60c
Do., 16 gage and finer..	5.10c

(Per pound)

Polished staples	3.30c
Galvanized fence staples	3.55c
Barbed wire, galv.	3.00c
Annealed fence wire	2.45c
Galvanized fence wire....	2.80c
Woven wire fencing (base column, c.l.).....	$63.00
Plain wire, 6-9 gage to mfg. trade	2.30c

Anderson, Ind., (merchant products only) and Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire	3.20c

Chicago $1 higher, Worcester $2 higher.

Cold-Finished Carbon Bars and Shafting □ □

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.....	2.00c
100,000 lbs. and over	1.97½c

Gary, Ind., Cleveland, up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Alloy Steel Bars □

Hot Rolled

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 2.45c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20

4100 .15 to .25 Mo.....0.50
4600 .20 to .30 Mo. 125-1.75 Ni. 1.05
5100 .80-1.10 Cr. 0.45
5100 Cr. spring .....base
6100 bars 1.20
6100 spring 0.70
Cr., Ni., Van. 1.50
Carbon van. 0.95
9250....Carbon base plus extras

Strip and Hoops □

Hot strip to 23⅞-in.

Pittsburgh	1.85c
Chicago, base	1.95c
Birmingham, base	2.00c
Detroit, delivered	2.05c
Phila., delivered..	2.14c
New York, del ..	2.18c
Cooperage hoop, Pittsburgh	1.95c
Chicago	2.05c
Cold-rolled strip, Pitts., Cleve.	2.60c
Worcester, Mass.	2.80c

Rails, Track Material □

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts. 24-45 lbs.	$27.00
50-60 lbs.	$24.00
70-75 lbs.	$18.00
80-85 lbs.	$25.00
100 lbs.	$26.00
Light rails, billet qual., Pittsb., Chi..	$35.00
Do., reroll. qual..	$34.00
Angle bars, mills....	2.55c
Spikes, R. R. base..	2.40c
Track bolts, base....	3.55c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs., up $1; 12 lbs., up $8; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts □ □

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots. Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	70 off
Rolled thread, ½ x 6 and smaller	70 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts, without nuts	70 off
Tire bolts	60 off
Stove bolts, 75 off in pkgs.; 83 off in bulk, 15,000 or more of a size.	
Rolled thread machine bolts, ½x6 and smaller,	70 off
Step bolts	66 off
Elevator bolts	66 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	80-10-10 off
Upset 1-in., smaller	85 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller....	75-10 off
Do., larger than 1-in..	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	2.90c
Struc., c. l., Chicago	3.00c
⅞-in. and smaller, Pitts., Chi., Cleve..	70 and 5 off
Wrought washers, Pitts., Chi., Phila..	6.00 off

Cut Nails □ □

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more no discount on size extras	$3.05
Do. less than 5 kegs; no discount on size extras	$3.20

Piling □ □

Pittsburgh	2.15c
Chicago, Buffalo	2.25c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads, Gary, Ind., 2 points less. Chicago delivered 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

Steel

In.	Blk.	Gal.
¼ and ⅜	53½	35
½	58½	47
¾	62	52
1—3	64	55

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD

Steel

2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½

LINE PIPE

Steel

½, butt weld	57½
⅛-inch, but weld	50½
¼—⅜, buttweld	52½
¾, butt weld	61
1—3, butt weld	63
2-inch, lap weld	59
2½—3, lap weld	62
3½—6, lap weld	64
7—8, lap weld	63

Iron

⅛—1½-inch, black and galv. take 4 pts., over; 2½—6-inch 2 pts. over discounts for same sizes, standard pipe lists. 8—12-inch, no extra.

BOILER TUBES

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¾—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 2000 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron; 10,000 pounds to carloads, base less 5%; under 10,000 pounds, two points under base only.

SEAMLESS BOILER TUBES

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots of 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are quoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

Seamless Tubing □

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe □

Class B Pipe—Per Net Ton

6-in. & over, Birm..	$38.00-39.00
4-in., Birmingham..	41.00-42.00
4-in., Chicago	49.00-50.00
6 to 24-in., Chicago..	46.00-47.00
5-in & over, east fdy	42.00
Do., 4-in.	45.00

Class A pipe $2 over Class B. Stnd. fitgs., Birm. base..$100.00

Semifinished Steel □

BILLETS AND BLOOMS

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., and Youngstown..	$27.00
Philadelphia	32.30
Duluth	31.00
Forging, Pitts., Chi. and Buffalo	32.00
Forging, Duluth	36.00

SHEET BARS

Pitts., Cleve., Young., Chi., Buff., Canton, O., and Sparrows Point, Md., ..	28.00

SLABS

Pitts., Cleve., Young.	27.00

WIRE RODS

Pitts., Cleveland	38.00
Chicago	39.00
Worcester, Mass.	40.00

SKELP

Pitts., Chicago	1.70c

Coke □ □ □

Price Per Net Ton

BEEHIVE OVENS

Connellsville Fur....	$3.60- 3.85
Connellsville fdry ..	4.60
Connell. prem. fdy.	5.10- 5.35
New River fdry	6.00
Wise county fdry..	4.25- 5.00
Wise county fur....	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.71- 9.31
Chi., ov., outside del.	8.50
Chicago, del	9.25
New England, Del...	10.50
St. Louis, del.	9.25
Birmingham, ovens	6.00
Indianapolis, del.	8.75
Cincinnati, del.	9.30
Cleveland, del.	9.25
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.50
Philadelphia, del.	9.00

Coke By-Products □

Per gallon, producers' plants.

Tank lots

	Spot
Pure benzol	$0.19
90- per cent benzol	$0.19
Toluol	0.30
Solvent naphtha.....	0.26
Commercial xylol ..	0.26

Per lb. f.o.b. New York

Phenol (200 lb. drums)..	0.163c
Do. (100 lbs.)	0.173c

Eastern Plants, Per Pound,

†Naphthalene flakes and balls, in bbl. ..	6.00

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.20

†Western prices ½-cent up.

Pig Iron

Delivered prices do not include switching charges except as noted. No. 2 foundry iron is 1.75-2.25 silicon; 25-cent differentials apply for each 0.25 silicon above 2.25. Gross tons.

BASING POINTS:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$19.50	$20.00	$19.00	$20.50
Birdsboro, Pa.	19.50	20.00	19.00	20.50
Birmingham, Ala., southern del.	14.50	.....	13.50	19.00
Buffalo	18.50	19.00	17.50	19.50
Chicago	18.50	18.50	18.00	19.00
Cleveland	18.50	18.50	18.00	19.00
Detroit	18.50	18.50	18.00	19.00
Duluth	19.00	19.00	.....	19.50
Erie, Pa.	18.50	19.00	18.00	19.50
Everett, Mass.	19.50	20.00	19.00	20.50
Granite City, Ill.	18.50	18.50	18.00	.....
Hamilton, O.	18.50	18.50	18.00	19.00
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	18.50	18.50	18.00	19.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	18.50	18.50	18.00	19.00
Sparrows Point, Md.	19.50	.....	19.00	.....
Swedeland, Pa	19.50	20.00	19.00	20.50
Toledo, O	18.50	18.50	18.00	19.00
Youngstown, O.	18.50	18.50	18.00	19.00
DELIVERED FROM BASING POINTS:				
Akron, O., from Cleveland	19.76	19.76	19.26	20.26
Baltimore from Birmingham	20.02	.....	19.90	.....
Boston from Birmingham	19.62	.....	19.50	.....
Boston from Everett, Mass.	20.00	20.50	19.50	21.00
Boston from Buffalo	20.00	20.50	19.50	21.00
Brooklyn, N. Y., from Bethlehem	21.77	22.27	.....	.....
Brooklyn, N. Y., from Bmghm.	21.39	.....	.....	.....
Canton, O., from Cleveland	19.76	19.76	19.26	20.26
Chicago from Birmingham	†18.72	.....	18.60	.....
Cincinnati from Hamilton, O.	19.51	19.51	19.01	.....
Cincinnati from Birmingham	19.13	.....	19.01	.....
Cleveland from Birmingham	18.62	.....	18.50	.....
Indianapolis from Hamilton, O.	20.77	20.77	20.27	21.27
Mansfield, O., from Toledo, O.	20.26	20.26	19.76	20.76
Milwaukee from Chicago	19.50	19.50	19.00	20.00
Muskegon, Mich., from Chicago, Toledo or Detroit	21.40	21.40	20.90	21.90
Newark, N. J., from Birmingham	20.51	.....	.....	.....
Newark, N. J., from Bethlehem	20.89	21.39	.....	.....
Philadelphia from Birmingham	19.88	.....	19.76	.....
Philadelphia from Swedeland, Pa.	20.26	20.76	19.76	.....
Pittsburgh dist. from Neville Island	(Neville Island base, plus 63c, 76c and $1.13 switching chgs.)			
Saginaw, Mich., from Detroit	20.60	20.60	20.10	21.10
St. Louis from Granite City, Ill.	19.00	19.00	18.50	.....
St. Louis from Birmingham	18.62	.....	18.50	.....
St. Paul from Duluth	20.94	20.94	.....	21.44

†Over 0.70 phos.

LOW PHOS.

Basing Points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.—$23.50. Basing Point: †Johnson City, Tenn.—$23.50

†Off grade material is $19.50

Philadelphia, standard and copper bearing 24.63

GRAY FORGE		CHARCOAL	
Valley furnace	18.25	Lake Superior fur.	21.00
Pitts. dist. fur.	18.25	Do., del. Chicago	24.04

SILVERY†

Jackson County, O., base; 6%—$22.75; 7—$23.75; 8—$24.75; 9—$25.75; 10—$26.75; 11—$27.75. Buffalo base prices $1.25 higher.

BESSEMER FERROSILICON†

Jackson County, O., base; 10%—$27.75; 11—$28.75; 12—$30.25; 13—$31.75; 14—$33.25; 15—$34.75; 16—$36.25. Buffalo base prices $1.25 higher.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Iron Ore □ □

LAKE SUPERIOR ORE

Gross ton, 51½% Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.00
No. Afr. & low phos.	9.50
Swedish basic, 65%	9.00
Swedish low phos.	9.50
Spanish No. Africa basic, 50 to 60%..	9.00
Tungsten, spot, sh. ton unit, duty pd.	$17.75-18.25
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$18.00

Manganese Ore □

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	24.00
So. African, 52%	24.00
So. Afr., 49-51%	22.00
Indian, 58-50%	nominal
Indian, 48-50%	nominal

Refractories □ □

Per 1000 f.o.b. Works

FIRE CLAY BRICK

First Quality

Pa., Ill., Ky., Md., Ga., Mo.	$45.00
Alabama	45.00

Second Quality

Pa., Ill., Ky., Md., Mo., Ga., Ala.	40.00

Ohio

First quality	$40.00
Intermediary	36.00
Second quality	25.00

MALLEABLE BUNG BRICK

All bases	50.00

SILICA BRICK

Pennsylvania	$45.00
Joliet, E. Chicago	54.00
Birmingham, Ala.	52.00

MAGNESITE

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases	40.00
Domestic dead-burned grains, net ton f.o.b. Chewelah, Wash.	22.00

BASIC BRICK

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Magnesite brick	$65.00
Chrome brick	45.00
Chemically bonded magnesite	55.00

Fluorspar, 85-5 □ □

Washed gravel, duty paid, tide, net ton	$19.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$15.50-16.00

Ferroalloys □ □

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	85.00
Do., Balti. base	85.00
Do., del. Pittsburgh	89.79
Spiegeleisen, 19-20%, dom. fur. spot†	26.00
Ferrosilicon 50%, freight all., cl.	77.50
Do., less carload	85.00
Do., 75 per cent.	126-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	90.00
2% carbon 95.00; 1%	105.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Ferrotungsten, stand., lb. cont. del.	1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont., on analysis	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., allow., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19%, Rockdale, Tenn., basis, 18%, $2 unitage	42.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage	55.00
Ferromolybdenum, stand. 50-60%, lb.	0.96
Molybdate, lb. cont.	0.80

†Carloads, Quan. diff. apply.

Nonferrous Mill Products

F.o.b. mill base, cents per lb. except as specified. Copper, brass products based on 9.00c Conn. copper

Sheets

Yellow brass (high)	14.50
Copper, hot rolled	16.00
Lead, cut, to jobbers	7.50
Zinc, 100-lb. base	9.50

Tubes and Pipes

High yellow brass	17.00
Seamless copper	17.25

Rods

High yellow brass	13.00
Copper, hot rolled	13.25

Anodes

Copper untrimmed	13.75

Wire

Yellow brass (high)	15.00

Old Metals □ □

Deal, buying prices, cents lb.

No. 1 Composition Red Brass

New York	4.37½-4.62½
Chicago	4.00- 4.25
Cleveland	4.75- 5.00
St. Louis	4.25- 4.50

Heavy Copper and Wire

*New York	5.87½-6.12½
Chicago, No. 1	5.75- 6.00
Cleveland	5.50- 5.75
*St. Louis	5.25- 5.50

Composition Brass Borings

New York	4.12½-4.37½

Light Copper

*New York	4.50- 4.75
Chicago	4.50- 4.75
Cleveland	4.75- 5.00
*St. Louis	4.25- 4.50

Light Brass

Chicago	2.12½-2.37½
Cleveland	2.50- 2.75

Lead

New York	2.87½-3.12½
Cleveland	2.75- 2.85
Chicago	2.75- 3.00
St. Louis	2.85- 3.00

Zinc

New York	2.00- 2.25
Cleveland	2.00- 2.25
*St. Louis	2.50- 2.75

Aluminum

Clips, soft, Cleve.	12.00-12.50
Borings, Cleveland	6.00- 6.25
Mixed, cast, Cleve.	9.50-10.00
Mixed cast, St. L.	9.00-10.00

Secondary Metals □

Brass ingot, 85-5-5-5	8.75
Stand. No. 12 Alum.	14.00

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	9.00-10.00
Boston, dealers	5.25- 5.50
Buffalo, No. 1	9.50-10.50
Buffalo, No. 2	**8.50- 9.00**
Chicago, No. 1	9.00- 9.50
Cleveland, No. 1	8.50- 9.00
Cleveland, No. 2	8.00- 8.50
Detroit, No. 1	7.75- 8.25
Detroit, No. 2	6.75- 7.25
Eastern Pa.	9.50
Eastern Pa., No. 2	8.00- 8.50
Federal, Ill.	7.25- 7.50
Granite City, R. R.	7.25- 7.75
Granite City, No. 2	6.25- 6.75
N. Y., deal. R. R.	7.00- 8.00
N. Y., deal. No. 2	5.50- 6.50
Pittsburgh, No. 1	11.00-11.50
St. Louis	6.50- 7.00
Valleys, No. 1	10.50-11.00

COMPRESSED SHEETS

Buffalo, dealers	**8.50- 9.00**
Chicago, factory	8.00- 8.50
Cleveland	8.00- 8.50
Detroit	7.75- 8.25
E. Pa., new mat.	9.50-10.00
Pittsburgh	10.75-11.25
St. Louis	5.00- 5.50
Valleys	10.00-10.50

BUNDLED SHEETS

Buffalo	**6.50- 7.00**
Cincinnati, del.	6.00- 6.50
Cleveland	6.50- 7.00
Pittsburgh	9.25- 9.75
St. Louis	4.00- 4.25

SHEET CLIPPINGS LOOSE

Chicago	4.25- 4.75
Cincinnati	4.50- 5.00
Detroit	4.50- 5.00
St. Louis	3.75- 4.25

STEEL RAILS, SHORT

Birmingham	10.50-11.00
Buffalo	12.00-12.50
Chicago (3 ft.)	10.00-10.50
Chicago (2 ft.)	10.50-11.00
Cincinnati, del.	10.00-10.50
Detroit	10.00-10.50
Pitts., open-hearth, 3 ft. and less	14.00-14.50
St. Louis, 2 ft.& less	9.50-10.00

STEEL RAILS, SCRAP

Boston	5.25- 5.50
Chicago	9.00- 9.50
Pittsburgh	11.25-11.75

STOVE PLATE

Birmingham	6.50- 7.00
Boston, dealers	3.25- 3.75
Buffalo	8.50- 9.00
Chicago, net	5.50- 6.00
Cincinnati, dealers	5.00- 5.50
Detroit, net	6.00- 6.50
Eastern Pa.	8.50
N. Y., deal. fdry.	6.00
St. Louis	6.00- 6.50

COUPLERS, SPRINGS

Buffalo	12.00-12.50
Chicago, springs	10.00-10.50
Eastern Pa.	13.00-13.50
Pittsburgh	13.25-13.75
St. Louis	8.50- 9.00

ANGLE BARS—STEEL

Chicago	9.75-10.25
St. Louis	7.75- 8.25

RAILROAD SPECIALTIES

Chicago	10.00-10.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.50-12.00
Cleveland, billet, bloom crops	13.00-13.50
Eastern Pa. crops	14.00-14.50
Pittsburgh, billet, bloom crops	14.00-14.50
Pittsburgh, sheet bar crops	13.00-13.50

FROGS, SWITCHES

Chicago	9.00- 9.50
St. Louis, cut	8.00- 8.50

SHOVELING STEEL

Chicago	9.00- 9.50
Federal, Ill.	6.75- 7.00
Granite City, Ill.	6.75- 7.00

RAILROAD WROUGHT

Birmingham	7.00- 7.50
Boston, dealers	**6.00- 6.50**
Buffalo, No. 1	7.50- 8.00
Buffalo, No. 2	**10.00-10.50**
Chicago, No. 1 net	7.75- 8.25
Chicago, No. 2	9.00- 9.50
Cincinnati, No. 2	7.00- 7.50
Eastern Pa.	9.50
N. Y., No. 1 deal.	7.00- 7.50
St. Louis, No. 1	6.50- 7.00
St. Louis, No. 2	7.50- 7.75

SPECIFICATION PIPE

Boston	**3.50- 4.00**
Eastern Pa.	9.00
New York, dealers	3.50- 3.75

BUSHELING

Buffalo, No. 1	**8.50- 9.00**
Chicago, No. 1	**8.25- 8.75**
Cinci., No. 1 deal.	5.50- 6.00
Cincinnati, No. 2	3.50- 4.00
Cleveland, No. 2	6.75- 7.00
Detroit, No. 1 new	6.75- 7.25
Valleys, new No. 1	10.00-10.50

MACHINE TURNINGS

Birmingham	4.50- 5.00
Boston, dealers	1.75- 2.00
Buffalo	**4.00- 4.50**
Chicago	4.75- 5.25
Cincinnati, dealers	4.00- 4.50
Cleveland	6.00- 6.50
Detroit	4.50- 5.00
Eastern Pa.	5.50- 6.00
New York, dealers	2.00- 2.50
Pittsburgh	8.00- 8.50
St. Louis	4.00- 4.50
Valleys	7.00- 7.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	3.25- 3.50
Buffalo	5.50- 6.00
Cincinnati, dealers	4.00- 4.50
Cleveland	6.75- 7.25
Detroit	5.50- 6.00
Eastern Pa.	5.00- 5.50
New York, dealers	1.50- 1.75
Pittsburgh	7.00- 7.50

CAST IRON BORINGS

Birmingham, plain	4.50- 5.00
Boston, chemical	8.50- 9.00
Boston, dealers	3.25- 3.50
Buffalo	5.50- 6.00
Chicago	5.00- 5.50
Cincinnati, dealers	4.00- 4.50
Cleveland	6.75- 7.25
Detroit	5.50- 6.00
E. Pa., chemical	12.00-13.00
New York, dealers	1.50- 1.75
Pittsburgh	7.00- 7.50
St. Louis	4.00- 4.25

PIPE AND FLUES

Cincinnati, dealers	4.00- 4.50

RAILROAD GRATE BARS

Buffalo	6.50- 7.00
Chicago, net	6.75- 7.25
Cincinnati	4.00- 4.50
Eastern Pa.	8.00- 8.50
New York, dealers	5.00- 5.50
St. Louis	4.00- 4.50

FORGE FLASHINGS

Boston, dealers	4.00- 4.25
Buffalo	**8.50- 9.00**
Cleveland	8.50- 9.00
Detroit	6.25- 6.75

FORGE SCRAP

Boston, dealers	4.00
Chicago, heavy	9.75-10.25
Eastern Pa.	9.00

ARCH BARS, TRANSOMS

St. Louis	10.00-10.50

AXLE TURNINGS

Boston, dealers	4.00- 4.50
Buffalo	7.00- 7.50
Chicago, elec. fur.	8.50- 9.00
Cleveland	6.00- 6.50
Eastern Pa.	9.50-10.00
St. Louis	6.00- 6.25

STEEL CAR AXLES

Birmingham	10.00-10.50
Boston, ship. point.	9.00- 9.50
Buffalo	12.00-12.50
Chicago, net	10.50-11.00
Eastern Pa.	14.00-15.00
St. Louis	10.00-10.50

SHAFTING

Boston, ship point.	10.50-10.75
Eastern Pa.	15.00-15.50
New York, dealers	10.75-11.25
St. Louis	11.00-11.50

CAR WHEELS

Birmingham, iron	8.50- 9.00
Boston, iron deal.	5.75- 6.00
Buffalo, iron	11.00-11.50
Buffalo, steel	13.00-13.50
Chicago, iron	9.75-10.25
Chicago, rolled steel	9.75-10.25
Cincinnati, iron	7.50- 8.00
Eastern Pa., iron	11.00-11.50
Eastern Pa., steel	13.00-13.50
Pittsburgh, iron	10.00-10.50
Pittsburgh, steel	13.25-13.75
St. Louis, iron	7.50- 8.00
St. Louis, steel	8.75- 9.25

NO. 1 CAST SCRAP

Birmingham	9.00- 9.50
Boston, No. 2	6.00
Boston, tex. con.	9.50-10.00
Buffalo, cupola	9.50-10.00
Buffalo, mach.	10.00-10.50
Chicago, agri. net	7.25- 7.75
Chicago, mach. net	8.50- 9.00
Chi., railroad net	8.00- 8.50
Cinci., mach. cup	8.50- 9.00
Cleveland, cupola	10.75-11.25
Detroit, net	8.50- 9.00
Eastern Pa., cupola	11.00-12.00
Pittsburgh, cupola	12.00-12.50
San Francisco, del.	13.50-14.00
Seattle	7.00- 8.50
St. Louis, No. 1	7.00- 7.50
St. L., No. 1 mach.	8.50- 9.00

HEAVY CAST

Boston, del.	4.50- 4.75
Buffalo, break.	7.75- 8.25
Cleveland, break.	7.50- 8.00
Detroit, break.	6.50- 7.00
Detroit, auto net	9.00- 9.50
Eastern Pa.	10.00-10.50
N. Y., No. 1, deal.	6.25- 6.50
N. Y., break. deal.	6.50- 6.75
Pittsburgh	10.00-10.50

MALLEABLE

Boston, consum.	11.50-11.75
Buffalo	10.50-11.00
Chicago, R. R.	9.25- 9.75
Cincinnati, agri. del.	7.50- 8.00
Chicago, R. R.	9.25- 9.75
Cleveland, rail	11.00-11.50
Detroit, auto	8.50- 9.00
St. Louis, R. R.	8.25- 8.75
Eastern Pa., R. R.	11.50-12.00

RAILS FOR ROLLING

5 feet and over

Birmingham	9.50-10.50
Boston, dealers	7.00- 7.25
Buffalo	12.00-12.50
Chicago	10.25-10.75
Eastern Pa.	12.00-12.50
New York, dealer	7.50- 8.00
St. Louis	9.00- 9.50

LOCOMOTIVE TIRES

Chicago (cut)	9.75-10.25
St. Louis, No. 1	9.50- 10.00

LOW PHOS. PUNCHINGS

Buffalo	13.75-14.25
Chicago	10.25-10.75
Eastern Pa.	14.50-15.00
Pittsburgh	13.00-13.50

Nonferrous Metal Prices of the Week

Spot unless otherwise specified. Cents per pound

	Copper: Electro., del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin New York: Spot	Straits Tin New York: Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot, N. Y.	Nickel Ingot
Aug. 18	9.00	9.12½	8.75	52.35	52.40	3.75	3.60	4.30	*22.90	8.75	36.00
Aug. 20	9.00	9.12½	8.75	52.20	52.25	3.75	3.60	4.30	*22.90	8.62½	36.00
Aug. 21	9.00	9.12½	8.75	52.05	52.10	3.75	3.60	4.27½	*22.90	8.62½	36.00
Aug. 22	9.00	9.12½	8.75	51.95	52.00	3.75	3.60	4.25	*22.90	8.62½	36.00
Aug. 23	9.00	9.12½	8.75	51.95	52.00	3.75	3.60	4.25	*22.90	8.62½	36.00
Aug. 24	9.00	9.12½	8.75	51.70	51.75	3.70	3.55	4.25	*22.90	8.62½	36.00

*Nominal range 19.00c to 22.90c.

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore*....	2.90c
Boston††	2.95c
Buffalo	3.00c
Chattanooga..	3.31c
Chicago	2.95c
Cincinnati	3.15c
Cleveland	2.95c
Detroit	3.03½c
Houston	3.00c
Los Angeles..	3.70c
New Orleans	3.30c
New York‡(d)	3.22c
Pittsburgh(h)	2.90c
Philadelphia*	2.90c
San Francisco	3.60c
Seattle	3.60c
St. Louis	3.19c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS	
Portland	3.40c
Chattanooga..	3.31c
Baltimore*....	3.00c
Chicago	2.75c
Cincinnati	3.15c
New York‡(d)	3.32c
Philadelphia*	2.90c
St. Louis	3.19c
Tulsa	3.25c

REINFORC. BARS	
Buffalo	2.60c
Chattanooga..	3.31c
Chicago 2.10c-2.60c	
Cleveland (c)	1.97½c
Cincinnati	3.25c
Houston	3.25c
Los Ang., cl...	2.15c
New Orleans	3.50c
Pitts., plain(h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	3.50c
St. Louis	3.24c
Tulsa	3.25c
Young. 2.30c-2.60c	

SHAPES	
Baltimore* ..	3.90c
Boston††	3.17c
Buffalo	3.25c
Chattanooga..	3.56c
Chicago	3.20c
Cincinnati	3.40c
Cleveland	3.31c
Detroit	3.40c
Houston	3.00c
Los Angeles..	3.70c
New Orleans	3.55c
New York(d)	3.37c
Philadelphia*	2.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c

PLATES	
Baltimore*....	2.90c
Boston††	3.18c
Buffalo	3.37c
Chattanooga..	3.56c
Chicago	3.20c
Cincinnati	3.40c
Cleveland, ¼-in. and over	3.31c
Detroit	3.40c
Detroit, ⅜-in.	3.65c
Houston	3.00c
Los Angeles..	3.70c
New Orleans	3.55c
New York(d)..	3.40c
Philadelphia*	2.95c
Phila. floor....	4.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE	
Baltimore*....	3.05c
Boston††	3.25c
Buffalo	3.62c
Chattanooga..	3.36c
Chicago	3.00c
Cincinnati	3.20c
Cleveland	3.11c
Det., 8-10 ga.	3.13½c
Houston	3.35c
Los Angeles..	3.80c
New Orleans	3.55c
New York.....	3.27c
Portland	3.75c
Philadelphia*	3.05c
Pittsburgh(h)	2.95c
San Francisco	3.75c
Seattle	3.75c
St. Louis	3.29c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK	
Baltimore*† ..	3.51c
Boston (g)....	3.90c
Buffalo	3.25c
Chattanooga..	4.21c
Chicago	3.85c
Cincinnati	4.05c
Cleveland	3.91c
Detroit	3.93½c
Los Angeles..	4.45c
New York.....	3.85c
Philadelphia*†	3.55c
Pittsburgh**..	3.55c
Portland	4.40c
San Francisco	4.40c
Seattle	4.40c
St. Louis	4.09c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS	
Baltimore *†..	4.21c
Buffalo	4.00c
Boston (g)....	4.55c
Chattanooga..	4.86c
Chicago (h)..	4.55c
Cincinnati	4.70c
Cleveland	4.61c
Detroit	4.70c
Houston	4.40c
Los Angeles..	5.05c
New Orleans	4.95c
New York.....	4.50c
Philadelphia*†	4.25c
Pitts.** (h)	4.15-4.45c
Portland	5.00c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.79c
St. Paul	4.19c
Tulsa	5.10c

BANDS	
Baltimore*....	3.15c
Boston††	3.25c
Buffalo	3.42c
Chattanooga..	3.61c
Chicago	3.30c
Cincinnati	3.45c
Cleveland	3.36c
Detroit, ⅜-in. and lighter	3.38½c
Houston	3.25c
Los Angeles..	3.90c
New Orleans	3.95c
New York(d)	3.62c
Philadelphia..	3.15c
Pittsburgh(h)	3.70c
Portland	3.90c
San Francisco	4.05c
Seattle	3.90c
St. Louis	3.54c
St. Paul	3.20c
Tulsa	3.45c

HOOPS	
Baltimore	2.80c
Boston	4.25c
Buffalo	3.42c
Chicago	3.30c
Cincinnati	3.45c
Det., No. 14 and lighter	3.38½c
New York	3.62c
Philadelphia..	3.40c
Pittsburgh(h)	3.70c
Seattle	5.60c
St. Paul	3.75c

COLD FIN. STEEL	
Baltimore(c)	3.71c
Boston 4.00c-4.50c	
Buffalo (h)....	3.55c
Chattanooga*	4.06c
Chicago (h)..	3.50c
Cincinnati	3.70c
Cleveland(h)	3.50c
Detroit	3.63½c
Los Ang.(f)(d)	4.95c
New Orleans	4.30c
New York...3.92c-4.42c	
Philadelphia..	3.73c
Pittsburgh(h)	3.45c
Portland (f)..	4.75c
San Fran.(f)(d)	5.95c
Seattle(f)(d)	4.75c
St. Paul	3.20c
St. Louis	3.74c
Tulsa	4.65c

COLD ROLL. STRIP	
Boston, 0.100-in., 500 lb. lots	5.35c
Buffalo	3.39c
Chicago	3.27c
Cincinnati(b)	3.42c
Cleveland (b)	3.20c
Detroit	3.33c
New York	4.70c
St. Louis	3.56c

(b) Plus straightening, cutting and quantoty differentials.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) 50 bundles or over.
(h) Outside delivery, 10c less.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs. extras on less.

Prices at Detroit, Cleveland, Chicago, Pittsburgh, Cincinnati, Chattanooga, New York Boston, St. Louis on heavier lines are subject to new quantity differentials:

399 pounds and less, up 50 cents; 400 to 9999 pounds, base; 10,000 to 19,999 pounds, 15 cents under; 20,000 to 39,999 pounds, 25 cents under; 40,000 pounds and over, 35 cents under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Aug. 23

Export Prices f. o. b. Ship at Port of Dispatch—By C. b'e (or Radio)

	British gross tons U. K. ports £ s d		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665 £ s d	
PIG IRON				
Foundry, 2.50-3.00 Silicon.	$15.27	3 0 0	$8.04	1 13 0
Basic bessemer	13.74	2 14 0*	7.30	1 10 0
Hematite, Phos. .03-.05	15.40	3 0 6	....	.....
SEMIFINISHED STEEL				
Billets	$28.00	5 10 0	$11.44	2 7 0
Wire rods, No. 5 gage	39.70	7 16 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$39.45	7 15 0	$26.77	5 10 0
Merchant bars	1.70c	7 10 0	.69c to .72c	3 2 6 to 3 5 0
Structural shapes	1.67c	7 7 6	.68c	3 1 6
Plates, †¼ in. or 5 mm.	1.82c	8 0 0	.91c	4 2 6
Sheets, black, 24 gage or 0.5 mm.	2.10c	9 5 0	1.13c to 1.16c	5 2 6 to 5 5 0
Sheets, gal., 24 gage, corr.	2.55c	11 5 0	1.43c	6 10 0
Bands and strips	1.87c	8 5 0	.88c	4 0 0
Plain wire, base	2.10c	9 5 0	1.18c	5 7 6
Galvanized wire, base	2.55c	11 5 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	2.72c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$ 4.58	0 18 0	.....	.....

British ferromanganese $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d $(43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$17.18	3 7 6(a)	$14.07	210	$14.79	310	$25.01	63
Basic bessemer pig iron	16.54	3 5 0(a)*	12.40	185	13.83	290	27.59 (b)	69.50
Furnace coke	4.45	0 17 6	8.04	120	5.25	110	7.54	19
Billets	28.00	5 10 0	28.81	430	20.99	440	38.31	96.50
Standard rails	1.87c	8 5 0	2.10c	700	2.42c	1,100	2.38c	132
Merchant bars	1.95c	8 12 0	1.68c	560	1.21c	550	1.98c	110
Structural shapes	1.99c	8 15 0	1.65c	550	1.21c	550	1.94c	107.50
Plates, †¼-in. or 5 mm.	1.92c	8 8 9	2.10c	700	1.54c	700	2.29c	127
Sheets, black	2.38c	10 10 0§	2.55c	850‡	1.71c	775‡	2.59c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.95c	13 0 0	4.50c	1,500	3.30c	1,500	6.66c	370
Plain wire	2.10c	9 5 0	3.39c	1,130	2.42c	1,100	3.11c	173
Bands and strips	2.12c	9 7 0	1.95c	650	1.54c	700	2.29c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. a del. Middlesbrough. b Since January.

Bars

Bar Prices, Page 52

Chicago—Steel bars have been reaffirmed for fourth quarter at 1.85c, Chicago, or Gary, with rail steel continuing at 1.75c. Specifications and sales recently have been steady, with anticipated improvement slow to develop. New business comes principally from reduction in consumers' stocks and this situation is expected to be more pronounced in September. Farm implement manufacturers are operating principally on production of repair parts and bar orders to this industry continue moderate. Automotive demand is steady.

Cleveland—Small orders for steel bars are fairly plentiful, and the tonnage booked so far this month has lifted considerably above that for the low point of the year reached in July. Producers appear confident September will bring further improvement. Field reports to one important interest here, covering some 20 steel consumers in the northern Ohio and Indiana territory last week showed the following: Four plants idle due to strikes, several others idle for other reasons; of the remaining number all operating at 5 to 25 per cent, except about five whose operating rates ranged from 25 to 35 per cent, and one at 50 per cent.

Pittsburgh—Hot-rolled merchant steel bars are to be priced at 1.80c base, Pittsburgh, for fourth quarter according to price declaration by producers last week. Alloy bars will be 2.45c, Pittsburgh. This is an affirmation of the present market. The market is quiet.

Boston — Commercial steel bar buying continues dull. The larger consumers have worked off stock more slowly than expected, although as a rule inventory is not heavy.

Philadelphia—Present prices of 1.80c, Pittsburgh, or 2.09c, Philadelphia, are being reaffirmed for fourth quarter. Meanwhile, new buying is light, with specifications expected to continue to come out on a hand-to-mouth basis.

New York—Producers of commercial steel bars will open books for fourth quarter Sept. 1 at unchanged prices, according to present indications. The present market is 1.80c, Pittsburgh, or 2.13c, delivered, New York. While specifications continue to come out slowly, at least a modest improvement is expected after Labor day.

British exports of iron and steel products to South Africa in the first eight months of 1933 were valued at £1,323,177, compared with £818,698 a year ago.

Plates

Plate Prices, Page 52

Philadelphia—Award of 11 naval vessels to private yards and 13 to navy yards, details of which appear on page 17, indicates early purchase of heavy tonnages of steel. Because bids of private yards on a heavy cruiser exceeded the appropriation this was awarded to a navy yard and a light cruiser was substituted among ships awarded the former.

Bids will be taken the middle or latter part of September on about 25,000 tons of hull steel for the 13 vessels to be built by navy yards, and private yards will require about 35,000 tons of steel on which protection have been issued. Probably little of this steel will be released until late in the year. Opening of bids in September by navy yards is expected to provide test of the executive order permitting a 15 per cent cut in prices to the government. Apparently private yards quoted the current market, regardless of the fact deliveries will extend over about two years. Twenty of the ships will be built in yards on the eastern coast, and only four on the Pacific.

Miscellaneous plate tonnage continues slack, with indications pointing to reaffirming of the present 1.90c. Coatesville, price for fourth quarter.

Pittsburgh — McClintic - Marshall Corp., Bethlehem, Pa., took an order for 150 steel buckle plates, miscellaneous structural shapes and 4500 pounds of button-head rivets for the Pittsburgh federal engineers last week, bidding $1597. American Bridge Co., Pittsburgh, with a bid of $1750 and Independent Bridge Co., Pittsburgh, at $1770, followed. Plates at 1.80c, Pittsburgh, have been reaffirmed for fourth quarter.

Chicago—Tank orders are light and pending plate tonnages are principally for public projects. Railroad requirements are only fair and in the absence of new business, shipments for railroad equipment building and repairs are expected to moderate over coming months. Municipal water tank construction continues slow. Plates are being continued next quarter at 1.85c, Chicago or Gary.

Cleveland—For Cleveland's southerly sewage disposal plant, 1200 tons of plates have been released, for tank tops, in addition to 2600 tons of reinforcing bars. Dolomite products Co., Rochester, N. Y., is inquiring for two lakes-canal boats, 300 x 48 feet, requiring 600 to 800 tons of plates each. Several hundred tons of plates also are asked in inquiries from boiler manufacturers for new installations in Great Lakes cargo vessels. The general run of orders is small. The Cleveland plate mills were idle last week.

New York—Miscellaneous inquiry includes 1000 tons of plates for the Standard Oil Co. of New Jersey for a plant at Sumatra. While no base price changes are indicated for fourth quarter, certain new extras, including quantity extras are expected to be revealed in the new handbook to be issued by the American Iron and Steel institute, Sept. 1, the extras to become effective Oct. 1.

Boston—Tanks for the Richfield Oil Corp. in Rhode Island require several hundred tons of plates, the only new large inquiry in the district. Plate orders as a rule are in small lots for quick delivery. Plates are steady at 2.20c, Boston.

Contracts Placed

1180 tons, nine tanks, Richfield Oil Corp., Rhode Island and New York, to Chicago Bridge & Iron Works, Chicago.

Tonnage unstated, 100,000-gallon tank, Limon, Colo., to Chicago Bridge & Iron Works, Chicago.

Contracts Pending

2500 to 5000 tons, twelve 134,000-barrel tanks, Standard Oil Co., San Francisco; bids opened.

1200 to 1600 tons, two 300 x 48 lakes-canal vessels for Dolomite Products Co., Rochester, N. Y.

341 tons, 60 to 72-inch penstock, Pine Valley dam near Ogden, Utah; bids Sept. 5.

Unstated tonnage, two self-propelling anchor barges, delivered afloat Willamette river; bids Sept. 5, United States engineer, Portland, Oreg.

Sheets

Sheet Prices, Page 52

Pittsburgh—Black sheets at 2.40c, Pittsburgh; hot-rolled No. 10 at 1.85c; galvanized at 3.10c, and cold-rolled gage bases at 2.50c and 2.95c, Pittsburgh, have been reaffirmed for the fourth quarter. Enameling sheet and electrical sheet prices also have been announced unchanged for that time by Pittsburgh producers. New

buying is light and producers' operations are down to 15 per cent in this district.

Chicago—Sheet sales and specifications still are slow, and occasional orders for small lots usually represent fill-in requirements. Automobile interests have yet to place any large tonnages, and such business is not looked for until September. Present prices are being continued under schedules filed recently.

Cleveland—Sheet mills here remained idle during the week, while those in a nearby lake district, serving mainly the automobile industry, resumed at a 30 per cent rate. Automobile manufacturers continue to purchase small lots for rounding out inventories. Some of the leading makers, however, are reported to be preparing inquiries for materials for new models. This leads sheet producers to expect considerable improvement in September. Other consumers show little interest in the market.

Philadelphia—Despite the fact consumers' stocks are gradually being reduced, little improvement in specifications is expected before next month.

New York—Sheet prices for fourth quarter are being reaffirmed, producers now filing their prices with the American Iron and Steel institute.. The institute's new handbook, to be issued Sept. 1, will reveal few important fundamental changes in sheet extras, it is said, but will clarify and eliminate ambiguities in a number of instances. Signing of jobber agreements is progressing more rapidly.

United States Steel Products Co. has been awarded 119 tons of galvanized corrugated roofing sheets for Panama, schedule 2985, opening Aug. 10 at $9933.95, delivered.

Boston—Sheet buying continues light. Improvement in several manufacturing industries next month is expected to be reflected in a better demand. Jobbers still have ample stocks.

Cincinnati—Improvement in demand for sheets is anticipated next month.. Present mill operations are low, in supplying small orders from a broad field.

Washington—Bureau of supplies and accounts, navy department, will take bids Aug. 31 for 202 flat galvanized steel sheets, 48 x 144 inches, about 50,000 pounds.

Ferro Enamel Corp., Cleveland, has formed an export division to handle sales in countries not reached by its present subsidiaries in Canada, England, France and Holland. Offices will be established at Ottawa, Ont., under direction of C. D. Clawson, Cleveland, and W. Mavor, managing director of Ferro Enameling Co. Ltd., Ottawa.

Railroads

Track Material Prices, Page 53

Railroads are almost entirely out of the steel market, only occasional small purchases being made for repair or maintenance purposes. Rail mills are practically at the end of their rollings and no new tonnage is in sight. Equipment builders find almost no inquiry and are well along with contracts placed earlier in the year.

Lehigh Valley has applied for government aid to finances repairs to 1000 box and 1500 coal cars.

Dominion Steel & Coal Corp., Sydney, N. S., has booked an order for 7500 tons of steel rails for South African railroads, the third such order to Canadian mills within two years.

Canadian manufacturers of railroad cars and equipment have indications of active demand for their products the coming fall and winter. It is understood the government is outlining plans for financing the purchase of cars and other equipment sorely needed by the railroads.

Track fastening prices have been affirmed for fourth quarter at unchanged prices, 2.40c base on spikes, 1.90c on tie plates and 2.55c on track bolts.

Rail Orders Placed

Government of South Africa, 7500 tons, to Dominion Steel & Coal Corp., Sydney, Nova Scotia.

Rail Orders Pending

United States engineer, Kansas City, Mo., 490 tons 85-pound rails, 1220 splice bars and 125 kegs track spikes; bids Aug. 31.

Car Orders Pending

United States engineer, Kansas City, Mo., four land booster cars; bid Aug. 28.

Strip Steel

Strip Prices, Page 53

Pittsburgh—Unchanged prices will be quoted for fourth quarter on hot-rolled and cold-rolled strip steel. Last week base prices at 1.85c, Pittsburgh, on hot-rolled strip and 2.60c, Pittsburgh, on cold-rolled were announced for fourth quarter. This announcement has been of little interest to buyers who are entering practically no forward specifications.

Chicago—Occasional betterment is reported in strip steel sales, from the necessity to replenish depleted inventories. Stocks of some users remain ample, however, and no marked gain is anticipated for at least several weeks. Automotive buying has been slightly more active in some instances. Hot-rolled strip is being continued next quarter at 1.95c, Chicago.

Cleveland—Strip mills here and in a nearby district resumed operations last week, on an accumulation of miscellaneous orders, and some new business from automobile manufacturers to balance their stocks. The Cleveland mill consequently added a third open hearth to its active list. Tonnage orders are expected from the automobile industry in September and some stampers have already asked for quotations. When strip mills open books Sept. 1 for fourth quarter present prices are expected to be reaffirmed.

New York—Prices on steel strip are being reaffirmed for fourth quarter. Trading in this material is negligible.

Philadelphia—Some strip sellers indicate intention of reaffirming current prices for a fourth quarter, at 1.85c, Pittsburgh, or 2.14c, Philadelphia, for hot strip and 2.60c, Pittsburgh or 2.89c, Philadelphia for cold strip. Trading continues slack.

Boston—Strip buying both cold and hot-rolled, is sluggish and spotty. Some producers of cold-rolled are able to meet the meager demand, mainly for narrow width, from stock.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 53

Little change is seen in demand for bolts, nuts and rivets and all classes of consumers are out of the market except for occasional small lots. Jobbers are taking only sufficient to balance their small sales.

Little change from the low rate of July is shown at Chicago Farm implement manufacturers are at a low production level. At Cleveland the summer decline usually ends about Aug. 15 but this month sales have continued to taper since that date. September is expected to bring an improvement.

Prices continue unchanged at 70 off list on bolts and nuts and 2.90c, Cleveland or Pittsburgh and 3.00c, Chicago, on large rivets.

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The N.I.A.A. CONFERENCE in CINCINNATI

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The palatial Netherland-Plaza Hotel, one of America's outstanding hostelries, and headquarters for the Cincinnati Conference of the N. I. A. A., September 20-21-22, 1934.

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CINCINNATI is going to do it up brown for you this year. The National Industrial Advertisers Association Conference on September 20, 21, and 22 promises to eclipse in sheer interest and entertainment any convention of the past years.

The program will be strong—strong in speakers whose names are industrial by-words throughout the land. Some of these headline speakers will be marketing men—others advertising men who have scored notable successes and know just how to interpret for us their profitable campaigns. Plenty of variety; plenty of good red meat; plenty of helpful, usable information for all of us.

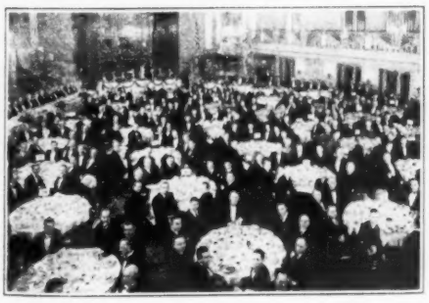
No matter where you live, Cincinnati lies within easy travelling distance. The registration fee is surprisingly low—only 6 dollars. The annual banquet will cost you little—and what a feast it will be! But the entertainment features do not stop here; there will be much else, as much as you can sandwich in between constructive meetings.

Yours is the golden key to the city. Cincinnati, with its old-world color and new-world energy, opens its arms to you. For self-improvement, entertainment, hospitality and economy, it cannot be matched as a conference city for the N. I. A. A.

BE READY: ACT NOW!

Send in your reservation early and be ready to go on September 20, 21, 22. Here is a holiday, a meeting of minds and personalities, and a university of industrial marketing—all rolled into one. Just address your inquiries and reservations to Royal Ryan, Registration Committee, Hotel Netherland-Plaza, Cincinnati. Of all N. I. A. A. Conferences, this is the one you *must not miss*.

THE CINCINNATI CONFERENCE OF THE N.I.A.A



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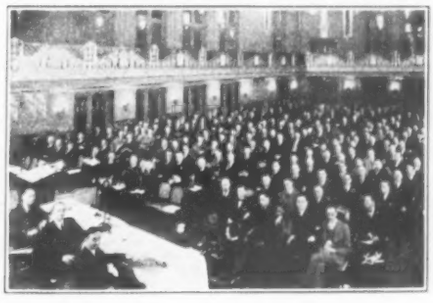


All principal meetings will be held in a large, comfortable, air-conditioned hall

Shapes

Structural Shape Prices, Page 52

New York— New structural steel inquiry is led by 4300 tons for pier shed 32, New York, bids on which close Sept. 5. Awards include more than 800 tons for an inspection shed at Jamaica, N. Y., for the board of transportation, N. Y. Pending volume is lower, following the placing of most of the larger projects in the district.

PWA has allotted $2,800,000 to the St. Lawrence Bridge commission for a high-level toll bridge across the St. Lawrence river between Ogdensburg, N. Y., and Prescott, Ont., conditional on $1,200,000 being raised by the commission. The bridge will require a large, though unestimated tonnage, of steel.

Cleveland—While several hundred tons of shapes for Ohio state bridges, on which bids recently were taken, still are pending, another list of bridge projects has been issued for bids Aug. 24 and 31, including 466 tons for a structure in Coshocton county, bids Aug. 31. Award of 800 tons for the Toledo, O., Y. M. C. A. building is expected shortly. Private work is light, featured by 80 tons for a Cleveland foundry building for the Aluminum Co. of America.

Chicago — Individual structural awards and inquiries usually involve less than 1000 tons, with bridge work predominating. Hammond, Ind., has placed 400 tons of piling for a filtration plant. About 500 tons of shapes will be required for a new radio building for the CHICAGO TRIBUNE. Plain material is being continued into fourth quarter at 1.85c, Chicago. A supreme court ruling, approving the consolidation of Chicago park districts, is expected to open the way for a PWA loan for the completion of the outer drive bridge here.

Pittsburgh—Prices on plain structural shapes at 1.80c base, Pittsburgh, and on steel sheet piling at 2.15c, Pittsburgh, have been reaffirmed for the fourth quarter, according to filings by local producers last week. A small Pennsylvania state highway letting closes Sept. 7 for work in Washington county. Developments are expected shortly on a large foreign inquiry for structural steel in a proposed bascule bridge which several Pittsburgh fabricators have been figuring on.

Philadelphia—A local contractor, Hughes Foulkrod Co., is low on the 3500-ton government building addition at Norfolk, Va. Except for scattered bridge work, little is noted. The Phoenix Bridge Co. will start fabricating steel very shortly for the Cape Cod bridge, requiring approximately 4000 tons of structurals and 1000 tons of miscellaneous steel. Present indications point to extension of the base price of 1.90c, Bethlehem, Pa., on shapes for fourth quarter, although some changes in extras may be revealed with the issuance of the code authority's new handbook, Sept. 1.

Boston — Structural inquiry is heavier, including close to 3500 tons for a bridge over the Saugus river at Lynn-Revere, Mass., and a ward building, City hospital, Boston. Awards include several hundred tons for small bridges.

Shape Contracts Placed

2500 tons, Bonneville, Oreg., dam powerhouse substructure and locks, to Pacific Car & Foundry Co., Seattle.

1800 tons, Rundell Memorial library, Rochester, N. Y., to F. L. Heughes & Co. Inc., Rochester; through Hunkin-Conkey Construction Co., Cleveland. Tentative award in July now officially confirmed.

595 tons, Tenth street viaduct, Union Pacific system, Omaha, Nebr., to Omaha Steel Works, Omaha.

475 tons, Delaware & Hudson railroad bridge, at Chazey, N. Y., to American Bridge Co., Pittsburgh; American Pipe & Construction Co., contractor.

450 tons, high school, Deerfield, Ill., to Joseph T. Ryerson & Son Inc., Chicago.

410 tons, central heating and power plant, Howard university, Washington, to Lehigh Structural Steel Co., Allentown, Pa.; Baben & Wright, Washington, contractors.

400 tons, piling, Hammond, Ind., filtration plant; 300 tons to Inland Steel Co., Chicago; 100 tons to Jones & Laughlin Steel Corp., Pittsburgh.

354 tons, Big Timber creek bridge, route 47, section 11, Westville-Brooklawn, N. J., to American Bridge Co., Pittsburgh; Francis A. Canuso & Son, Philadelphia, general contractors.

350 tons, pipe connecting lintels for dredges, government dam, Fort Peck, Mont., to Taylor Forge & Pipe Works, Chicago.

350 tons, bridges for Louisville & Nashville railroad, to Virginia Bridge & Iron Co., Memphis, Tenn.

315 tons, state bridge, Middleburg-Breakabeen highway, Schoharie county, New York, to Fort Pitt Bridge Works, Pittsburgh; through M. R. Ingraham Inc., Albany, N. Y.

350 tons, various bridges on Louisville division for Louisville & Nashville railroad, to Virginia Bridge & Iron Works, Roanoke, Va.

310 tons, school building, Bismarck, N. Dak., to Crown Iron Works Co., Minneapolis.

270 tons, state bridges, Yakima county, Washington, to Virginia Bridge & Iron Works, Richmond, Va.; Elliott & Co., Seattle, general contractor.

250 tons, overpass for Chicago, Burlington & Quincy railroad, Council Bluffs, Iowa, to Omaha Steel Works, Omaha.

210 tons, sheet steel piling, M street bridge, Sacramento, Calif., to Pacific Coast Steel Corp., San Francisco.

200 tons, bridge, Springfield, Ill., for Baltimore & Ohio railroad, to American Bridge Co., Pittsburgh.

180 tons, bridge for United States bureau of public roads, Red Cliff, Colo., to Kansas City Structural Steel Co., Kansas City, Mo.

180 tons, bridge, South Royalton, Vt., to Lackawanna Steel Construction Corp., Buffalo.

180 tons, National Sugar Refining Co. of N. J., warehouse No. 6, Long Island City, N. Y., to Ingalls Iron Works Co., Verona, Pa.

180 tons, bridge, Stamford, Vt., to American Bridge Co., Pittsburgh.

175 tons, bridge, Dover Point, N. H., to Lackawanna Steel Construction Corp., Buffalo.

165 tons, railroad bridge, Plymouth, Mich., to American Bridge Co., Pittsburgh.

150 tons, state bridge, Bush river, Harford county, Maryland, to American Bridge Co., Pittsburgh; Whitney-Turner Construction Co., Baltimore, general contractor. Concrete Steel Co., New York, awarded 35 tons of reinforcing bars.

150 tons, bridge, Omaha and Fremont, Nebr., to Omaha Steel Works, Omaha.

135 tons, state highway bridge, Schuylkill county, Pennsylvania, to Phoenix Bridge Co., Phoenixville, Pa.

115 tons, bottling plant, Saratoga Springs, N. Y., to Smith & Caffrey, Syracuse, N. Y.

110 tons, including plates, lighthouse tender RHODODENDRON, to Commercial Iron Works, Portland, Oreg.

110 tons, shapes and bars, two bridges, near Wapanucka, Okla., to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.; J. W. Hooper, Oklahoma City, general contractor.

105 tons, building at No. 13 West 16th street, New York, to George A. Just Co., Long Island City, N. Y.; through Rheinstein Construction Co.

101 tons, postoffice, Malone, N. Y., to Shippers Carline Inc., Milton, Pa., and Truscon Steel Co., Youngstown, O.; through M. E. Ryan Co., Schenectady, N. Y.

100 tons, Carney's Point, N. J., plant addition for E. I. Dupont de Nemours & Co., to Belmont Iron Works, Philadelphia.

100 tons, St. Michael's monastery, Union City, N. J., to Selbach-Meyer Co., Jersey City, N. J.; several hundred tons to be awarded same fabricator later.

100 tons, shapes and bars, underpass and approaches, route 10, Hickory Catawba county, North Carolina, to Carolina Steel & Iron Co., Greensboro, N. C.; L. S. Bradshaw, Sasilbury, N. C., general contractor.

55 tons, highway bridge, Scott and Car-

Shape Awards Compared

	Tons
Week ended Aug. 25	10,385
Week ended Aug. 18	12,692
Week ended Aug. 11	23,882
This week in 1933	5,084
Weekly average for 1933	14,838
Weekly average, 1934	17,178
Weekly average, July	18,609
Total to date, 1933	504,037
Total to date, 1934	601,246

ver counties, Minnesota, to American Bridge Co., Pittsburgh.

Shape Contracts Pending

4300 tons, pier shed 32, Hudson river, New York; bids Sept. 5.

3500 tons, building addition, bureau of yards and docks, Norfolk, Va.; Hughes-Foulkrod Co., Philadelphia, general contractor.

3300 tons, first section of New York Central railroad's west side, New York, program; new bids in.

2600 tons, bridge, Hannibal, Mo.; Mt. Vernon Bridge Co., Mt. Vernon, O., low.

2500 tons, bridge, Saugus river, Lynn-Revere, Mass.

1400 tons, Pickwick river lock near Knoxville, Tenn.; plans being prepared and bids expected to be asked about January, 1935.

1000 tons, operating and ward building, City hospital, Boston, Mass.; bids Aug. 27.

792 tons, state bridge projects in Ohio; bids Aug. 24 and 31 to department of highways, Columbus. Includes 466 tons for Coshocton county bridge; bids Aug. 31.

750 tons, shapes and rails for crane runways, Boulder dam, Boulder City, Nev.; bids opened.

700 tons, bridge, Kingsport, Tenn.

700 tons, high school, Hamden, Conn.; new bids in.

610 tons, underpass, Dallas, Tex.; bids Sept. 12.

610 tons, class room buildings, Fordham university, Fordham, N. Y.

600 tons, bridge at unstated location for Chicago, Milwaukee, St. Paul & Pacific railroad.

500 tons, radio building, CHICAGO TRIBUNE, Chicago; R. C. Wieboldt Co., general contractor.

350 tons, postoffice, Decatur, Ill.; McDonald Construction Co., St. Louis, general contractor.

370 tons, high school Oceanside, N.Y.

325 tons, government lock and dam, Savannah river, Augusta, Ga.

300 tons, incinerator building for city of Pittsburgh.

800 tons, Pennsylvania railroad work at Elmira, N. Y.; American Bridge Co., Pittsburgh, low.

300 tons, sewage disposal plant, Milwaukee.

260 tons, state bridge, New Martinsville, W. Va.; Pittsburgh Bridge & Iron Co., Rochester, Pa., low.

250 tons, superstructure for Brooklyn bridge, Wetzel county, West Virginia; Pittsburgh-Des Moines Steel Co., Pittsburgh, low.

237 tons, placing only, sheet steel piling, Pine Valley dam near Ogden, Utah; bids Sept. 5.

205 tons, piers 38 and 40, San Francisco; bids opened.

200 tons, junior high school, Milton, Mass.; bids being taken.

200 tons, garage and shops, West Chester, Pa.; Reading Metalcraft Co., Reading, Pa., low.

200 tons, building at Louisville, Ky., for Louisville university.

200 tons, state highway bridge, Parkin, Utah.

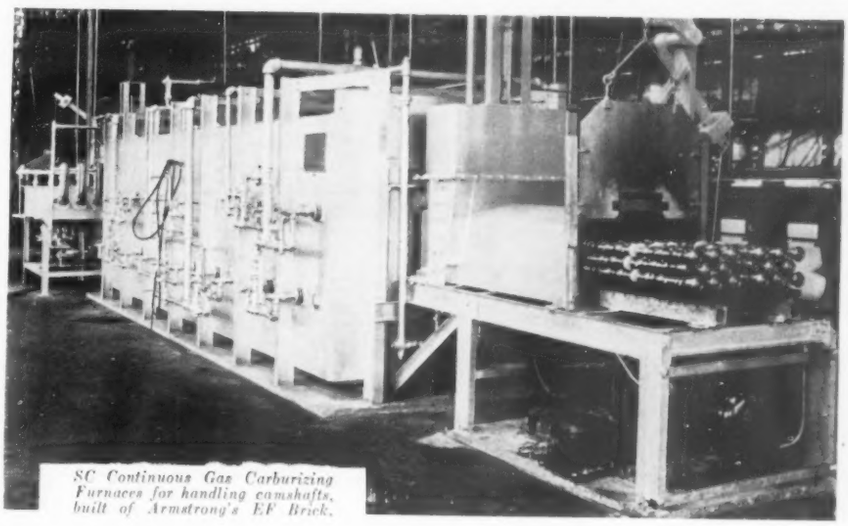
163 tons, for navy yard, Norfolk, Va.; Hughes-Foulkrod Co., Philadelphia, low.

150 tons, state highway bridge, Kemmerer, Wyo.

149 tons, state bridge over Ham's Fork river, Lincoln county, Wyoming; bids opened.

WHY

SC Continuous Gas Carburizing Furnaces are built with EF BRICK



SC Continuous Gas Carburizing Furnaces for handling camshafts, built of Armstrong's EF Brick.

"SAVINGS of 35% to 60% have been effected by each furnace installed," says Surface Combustion of these Continuous Gas Carburizing Furnaces. "These furnaces have conclusively proved their many advantages, both with respect to production and quality."

The reason? Credit—in part, at least—is due the insulation. Surface Combustion Continuous Gas Carburizing Furnaces are built with Armstrong's EF Brick. That means thinner walls—lower installation and fuel costs—because EF Brick requires no fire brick protection. The low iron content of EF Brick also makes it particularly suitable for a carburizing process.

But this light-weight semi-refractory brick does more than cut cost. It insures uniform heat so necessary in quality production. And it insures, too, quicker heating, a sharper furnace that can be keyed to the tempo of the other units in a continuous production line.

Use Armstrong's EF Brick for temperatures up to 2475°. It's available in all standard fire brick sizes as well as special shapes up to 12" x 24" x 4½". For samples and further information, write Armstrong Cork & Insulation Company, 985 Concord Street, Lancaster, Penna.

Some important advantages of these SC furnaces*

1. Low installation cost
2. No boxes or containers
3. 50% saving in floor space
4. Material decrease in labor due to elimination of packing
5. Elimination of carburizing compound
6. Control of depth of case
7. Control of type and character of case
8. Rapid penetration of case
9. Can be placed in production line

*Quoted from publication of Surface Combustion Corp., Toledo, Ohio.

Armstrong's

HIGH TEMPERATURE PRODUCTS

Armstrong's . . EF . . Nonpareil

Reinforcing

Reinforcing Bar Prices, Page 53

Chicago—The concrete bar market is more active in the number of pending orders than in total tonnage involved. A few private projects are materializing, the largest of these being about 600 tons additional placed for various structures at the stockyards. Several hundred tons of bars are involved in additional road work in Illinois on which bids are to be asked soon. Prices will continue next quarter at 2.10c for cut lengths of billet bars, and 1.95c for rail steel.

Pittsburgh — Plans are nearing completion on the Tygart Valley reservoir dam near Grafton, W. Va., estimated to cost about $12,000,000 and to require, among other materials, about 900 tons of steel reinforcing materials. Plans are expected to be completed by Pittsburgh army engineers in about three weeks, with bids to be opened probably at mid-October. Reinforcing bar inquiries are more numerous. The price of new billet steel bars at 2.05c base, Pittsburgh, for cut lengths, has been reaffirmed for the fourth quarter.

Cleveland—Several public works projects in Ohio moved forward during the week with orders for a total of 5600 tons of concrete bars. At Columbus, 3000 tons were awarded for a sewage system, 1500 tons going to the Hausman Steel Co., Toledo, with steel to be supplied by Pollak Steel Co., Cincinnati; and 1500 tons to the Ben-Tom Supply Co., Columbus, steel to be furnished by the West Virginia Rail Co., Huntington, W. Va. At Cleveland, 2600 tons for the southerly sewage disposal plant, taken by the Patterson-Leitch Co., was released. Except for award of 150 tons for the Fisher Body Co.'s assembly plant here industrial purchases were light.

Boston—Small-lot buying of reinforcing steel bars is fairly active, while inquiry is slightly heavier for bridges and construction financed by federal funds.

New York—Several sizable reinforcing concrete bar projects have been tentatively closed and awards in the New York district approximate 1000 tons. A large volume is pending for New York and New Jersey state highway and bridge construction.

Philadelphia—While a few fair size jobs have been figured, reinforcing bar awards in the past week have continued light. Billet steel bars, cut lengths, are 2.05c, Pittsburgh, or 2.34c, Philadelphia.

Reinforcing Steel Awards

12,128 tons, Bonneville, Oreg., dam powerhouse substructure and lock, to Pacific Coast Steel Corp., Seattle; General Construction Co., Seattle, and J. F. Shea, Portland, Oreg., contractors. See Seattle report page 69.

5100 tons, five Oregon coast bridges, to various Portland, Oreg., fabricators.

3000 tons, Columbus, O., sewage system; 1500 tons to Hausman Steel Co., Toledo, O., steel to be supplied by Pollak Steel Co., Cincinnati; 1500 tons to Ben-Tom Supply Co., Steel to be fur-

Concrete Awards Compared

	Tons
Week ended Aug. 25	25,701
Week ended Aug. 18	757
Week ended Aug. 11	2,758
This week in 1933	6,500
Weekly average for 1933	3,232
Weekly average, 1934	4,939
Weekly average, July	3,251
Total to date, 1933	116,869
Total to date, 1934	172,891

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nished by West Virginia Rail Co., Huntington, W. Va.

800 tons, Orleans street viaduct, Baltimore, to Dietrich Bros., Baltimore; through George A. Fuller Co.

750 tons, wharf and transit shed, Stockton, Calif., to Simmons Co. of California, San Francisco.

600 tons, various structures in Chicago stockyards district, to Calumet Steel Co., Chicago.

565 tons, Queens pier approaches to Triboro bridge, New York, to E. T. Edwards, Columbia, Pa.; through Rodgers & Hagerty Inc.

533 tons, state highway bridges, Nacogdoches and Angelina counties, Texas, to Concrete Engineering Co., Houston, Tex.; Russ Mitchell Inc., Houston, general contractor.

350 tons, warehouse for General Aniline Works, Grasselli, N. J., to Truscon Steel Co., Youngstown, O.

300 tons, mesh, county highways, Suffolk county, New York, to American Steel & Wire Co., New York.

300 tons, for delivery to Panama, to Carroll & McCreary Co. Inc., Brooklyn, N. Y.

240 tons, underpass, north approach Cape Cod bridge, Bourne, Mass., to Barker Steel Co., Boston; through Frank Westcott, North Attleboro, Mass.

210 tons, highway, route 25, section 12, Bridgeboro to Cinnaminson road, Burlington county, New Jersey, to Sweet Steel Co., Williamsport, Pa.; Riverside Contracting Co., general contractors.

200 tons, mesh state highways, Steuben and Allegany counties, New York, to American Steel & Wire Co., New York; through H. E. Bunce, Hornell, N. Y.

175 tons, mesh highways, Richmond county, Staten Island, New York, to American Steel & Wire Co., New York.

150 tons, plant for Fisher Body Co. at Cleveland, to Jones & Laughlin Steel Corp., Pittsburgh.

100 tons, distributing station, government dam, Fort Peck, Mont., to Kalman Steel Corp., Bethlehem, Pa.

100 tons, TVA construction, Tennessee, to Joseph T. Ryerson & Son Inc., Chicago.

100 tons, dam and reservoir, Danville, N. Y., to Concrete Steel Co., New York.

Reinforcing Steel Pending

850 tons, Tygart Valley reservoir dam near Grafton, W. Va.; preliminary plans and specifications being drawn by Pittsburgh federal engineers to be completed about Sept. 15; bids to be asked about Oct. 15.

300 tons, incinerator for Michigan City, Ind.; bids Aug. 30.

285 tons, underpass, Dallas, Tex.; bids Sept. 12.

240 tons, placing only, Pine Valley dam, near Ogden, Utah; bids Sept. 5.

210 tons, radio station, Pearl Harbor, T. H.; specifications 7525; bids Sept. 5.

Tin Plate

Tin Plate Prices, Page 52

Pittsburgh—The price of tin mill black sheets at 2.75c base, Pittsburgh, has been extended for the fourth quarter. Likewise, there has been no change in the Pittsburgh price of $5.25 per base box on standard tin plate. Domestic demand is spotty with canmakers' stocks generally large. Government buying of tin plate for the large cattle-canning program has not come through in any volume. Tin plate operations were at 50 per cent last week; this week they will drop to 40 per cent.

New York—Tin plate prices are being extended for fourth quarter. Specifications are fairly active but lighter than a fortnight ago.

Wales is to be allotted 55 per cent of the world tin plate market under the provisional arrangement of quotas incorporated into the recently-signed international tin plate agreement, according to a report from American Vice Consul Paul C. Seddicum, Cardiff, made public by the commerce department. The next largest quota has been granted to the United States and is 22 per cent, followed by Germany with an allotment of about 16 per cent. The remaining 7 per cent has been allocated to Italy and France.

IN answer to a universal request for a class of small-diameter cold finished rounds—suitable for applications that require an extremely smooth finish with high accuracy and concentricity—we offer a special class of B & L *drawn, ground and polished steel rods* with a size tolerance of plus .000″ minus .002″ or special accuracy to a minimum of plus or minus .00025″.

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Pipe

Pipe Prices, Page 53

Chicago—The city has awarded 2228 tons of 4 to 16-inch cast pipe to the low bidders announced several weeks ago, and will close bids Sept. 4 on about 100 tons of special fittings for water pipe tunnels. Filtration and sewage disposal plant construction is outstanding in pending work involving cast pipe. A fairly large tonnage will be required for the Hammond, Ind., filtration plant although bids have yet to be asked. Green Bay, Wis., has placed a small tonnage of 12-inch pipe, while Michigan City, Ind., closes bids Aug. 30 on a small lot of similar size.

Pittsburgh—Some encouragement in the pipe market is to be derived from reports that pipe jobbers have looked over the possibility of moving tonnages of standard pipe for private dwelling repairs under proposed federal loans. The market for oil country goods is slow, and mechanical tubing continues in poor demand. Discounts on all tubular products were announced last week to continue unchanged for the fourth quarter.

The inquiry for 14,256 tons of pipe for the Standard Oil Co. of California, apparently has been withdrawn, as the company has decided to use some of its old pipe for the 108-mile line. Supplementing this is the award of 2500 tons of new pipe for the project, as recently reported.

New York—Three eastern foundries shared in the award of approximately 3400 tons of cast pipe and fittings bought by the city of New York last week. The pipe is cement lined on which prices held well. Buying, except for the New York purchase, is light, largely fill-in business.

Boston—Cast pipe inquiry is light, but includes about 850 tons for Vergennes, Vt. The New England foundry finally was awarded 400 tons of 6-inch pipe for Stowe, Vt. Specifications against old contracts are slightly heavier. Prices are firm. Sterling, Mass., closes Aug. 28 on several hundred tons.

Birmingham, Ala.—Cast pipe awards have been coming in slowly recently, most contracts being for small quantities. Many smaller communities are now completing applications for loans with which to build waterworks and sewer systems, and this will develop some business for pipemakers, no small amount of which can be supplied from stock on hand.

Cast Pipe Placed

3400 tons, cement lined pipe and fittings, New York, bulk to United States Pipe & Foundry Co., Burlington, N. J., with Donaldson Iron Works, Emaus, Pa., and R. D. Wood & Co., Florence, N. J., sharing in the award.

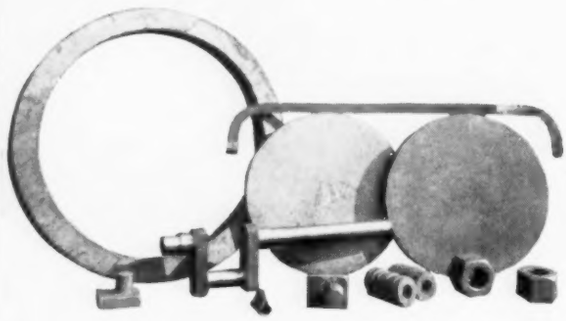
2228 tons, 4 to 16-inch, Chicago; 800 tons to Glamorgan Pipe & Foundry Co., Lynchburg, Va.; 1428 tons to United States Pipe & Foundry Co., Burlington, N. J.

445 tons, 4 to 10-inch, class 150, Fallon, Nev., allocated as follows: 345 tons to Pacific State Cast Iron Pipe Co., Provo, Utah, and 100 tons to United States Pipe & Foundry Co., Burlington, N. J.

400 tons, 6-inch, Stowe, Vt., to Warren Foundry & Pipe Co., Phillipsburg, N. J.; W. G. Fritz Co., West Orange, N. J., general contractor.

100 tons, 6-inch, Public Service Corp. of New Jersey, to United States Pipe & Foundry Co., Burlington, N. J.

Unstated tonnage, 1400 feet, 12-inch.



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Green Bay, Wis., to James B. Clow & Sons, Chicago.

Steel Pipe Placed

1800 tons, 7000 feet, 48-inch, electric welded, ¾-inch plate, to Walsh's Holyoke Steam Boiler Works, Holyoke, Mass.; through A. G. Tomasello Sons Inc., Boston. Previously reported as 1500 tons.

314 tons, 4 to 8⅝-inch, black, specification 1476, Los Angeles, divided between four Los Angeles distributors.

290 tons, 22-inch welded pipe, bid 26,746, Los Angeles, to Southern Pipe & Casing Co., Los Angeles.

125 tons, 24-inch welded pipe, Lemon Grove & Spring Valley irrigation district, La Mesa, Calif., divided between Consolidated Steel Corp. and Southern Pipe & Casing Co., Los Angeles.

Cast Pipe Pending

940 tons, 2 to 12-inch, class 150, Phoenix, Ariz.; bids Aug. 27.

665 tons, 20-inch, Washington; bids Aug. 30, district commissioners.

393 tons, 8-inch, class 150, Culbertson, Mont.; bids in.

850 tons, 10-inch, class 150, Vergennes, Vt.

181 tons, 4 to 8-inch, class 150, Fairview, Mont.; bids in.

165 tons, 4 to 8-inch, class 150, Eklaka, Mont.; bids in.

135 tons, Moab, Utah; bids Aug. 31.

128 tons, 8-inch, class 150, Eureka, Calif.; bids in.

100 tons, 48-inch, class C fittings for Polk street and Eighteenth street water pipe tunnels, Chicago; bids to commissioner of public works, Sept. 4.

Unstated tonnage, 1400 feet, 12-inch, Michigan City, Ind.; bids Aug. 30.

Sieel Pipe Pending

275 tons, 6 and 8-inch, 10-gage, Lovelock, Nev.; bids in.

Wire

Wire Prices, Page 53

Cleveland—Although sellers have not been informed definitely, prices of wire and wire products for fourth quarter are expected to be reaffirmed, with books opened Sept. 1. The Cleveland Illuminating Co. is in the market for a moderate tonnage of electrical wire.

Chicago—Wire sales and specifications hold around the small volumes of the preceding several weeks. Jobbers' stocks are adequate and consumers of manufacturers' wire as yet have found it unnecessary to make extensive replenishments.

Boston—Wire buying is slow with demand covering practically all lines, including specialties. Plain bright wire is steady at 2.40c, to the manufacturing trade.

New York—Improvement is slow in merchant or manufacturing wire demand, with buying only for immediate needs. Prices on nails, plain wire, rods and fencing have been reaffirmed for fourth quarter. Fence is quoted at $63 for carloads and $67 for less carloads and pool cars.

Philadelphia—Some wire sellers have filed fourth quarter prices with the code authority, reaffirming the current market. While looking more or less for a continuation of hand-to-mouth buying, producers believe that improvement in specifications is likely to come in September.

Washington—Bureau of supplies and accounts, navy department, will take bids Sept. 7 on 34,200 feet of high-grade ungalvanized plow-steel wire rope.

Pig Iron

Pig Iron Prices, Page 54

Pittsburgh—Shipments are light, few foundries having melting schedules requiring any large quantities

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at a time. Only one merchant furnace here is active. The present price schedule of $18.50 for foundry, $19 for bessemer and $18 for basic iron is being extended into the fourth quarter.

Cleveland—Foundry coke shipments, higher this month than in either June or July, show pig iron consumption is better than indicated by sales or production. Gray iron foundries are reported to be melting as much iron this month as in either of the two preceeding periods, though malleable foundries are practically idle. Pig iron sales are restricted to occasional carloads. Prices are being reaffirmed for fourth quarter. The Otis Steel Co. here has blown out one of its two blast furnaces.

Chicago—Sales and shipments both are smaller than in July, while foundry schedules generally lack improvement and the tendency in operations is downward slightly. The recent market of $18.50, furnace, for No. 2 foundry and malleable is being continued into fourth quarter, but sellers look for only a moderate amount of new business prior to the opening of that period. Occasional orders of 50 to 100 tons are being received but larger consumers are adequately protected by stocks for a number of weeks.

New York—According to postings with the code authority thus far, pig iron producers will open books Sept. 1 for fourth quarter at unchanged prices. Producers are hopeful that soon after that date seasonal influences will stimulate trading. At present business remains decidedly slack, although possibly a shade more active than a week ago.

Boston—Sales are at a low ebb, including only a few cars of the higher silicon grades. Prices are firm and some southern iron has been sold with the 38-cent differential applying, although the volume was small. Foundry melt continues low.

Philadelphia—Pig iron producers are filing prices for next quarter at unchanged levels, preparatory to opening books Sept. 1. Meanwhile, trading continues slack, with the melt lighter than in July.

Buffalo—Quiet prevails in the market, with only occasional inquiries or orders. Most users covered prior to July 1 for third quarter requirements.

Cincinnati—A definite improvement is foreseen for September, inquiries already showing several important melters are about to buy, their stocks being depleted.

St. Louis—Buying of pig iron having continued light during the last week, makers are now giving thought to the possible carryover of stocks in hands of melters into the fourth quarter. Melters in the district in July and August did not consume as much iron as in June.

Birmingham, Ala.—Purchasing is slow, consumers' stocks still being large. Curtailment of production so far in this district has been confined to basic iron.

Toronto, Ont.—While no direct improvement is apparent in Canadian pig iron markets for the week, indications for a stronger situation are shaping up. It is understood that the railways are now considering large purchases of rails and rolling stock and contracts will be awarded in the not distant future.

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Scrap

Scrap Prices, Page 55

Pittsburgh.—No. 1 heavy melting steel remains $11 to $11.50 per ton, delivered in this district, although there are few buying orders. However, in scrap rails a preference has been shown by a district mill to pay $11.75, owing to a scarcity, and the market has advanced on that one grade 25 cents a ton.

Cleveland—Movement of steel and iron scrap is at a minimum but dealers believe Labor day will mark a turning point. Mills and foundries are taking little but blast furnace grades continue to move fairly well. Prices are unchanged.

Chicago.—Scrap is in its dullest position of the year to date with few orders placed. District mills are not interested in shipments against old contracts. Prices lack strength but have held principally because of absence of distress offerings. Heavy melting steel nominally continues $9 to $9.50, with $9.75 reported paid for recent offerings of this grade on a railroad list.

Boston—The Worcester, Mass., consumer of heavy melting steel scrap has dropped its price to $7, delivered, for No. 1, with $6.50 paid for No. 2 and $5.75 for skeleton. The Phillipsdale, R. I., consumer recently bought No. 1 at slightly higher prices.

New York—Domestic demand for scrap is sluggish with little buying and some eastern mills holding up shipments. Buying for export continues active at unchanged prices, $8 for No. 1, barge, and $6.50 for No. 2. Cast grades are inclined to be easy. Luria Bros. & Co. recently bought approximately 70,000 tons from the Southern railway, the scrap coming from dismantling of cars and locomotives.

Philadelphia.—No. 1 heavy melting steel has dropped 50 cents a ton on the purchase of a substantial tonnage by a consumer in this district at $9.50, delivered. Some purchases have also been made by the same consumer of No. 2 steel, at $8 delivered, the miminum price recently quoted. Meanwhile, the top price of $9 has disappeared with the market now holding on $8 to $8.50. No. 1 forge is off nominally to $9, and heavy breakable to $10 to $10.50. No.

1 railroad wrought is $9.50, delivered. Other grades are nominally unchanged, with general buying light. Prices quoted Aug. 22, on approximately 8000 tons of steel boat scrap at the Philadelphia navy yard, lack special significance in view of the fact that the scrap will be cut to carlot size, with the dismantling to continue over a period of 10 months.

Cincinnati.—The iron and steel scrap market is duller than at any time in the past 18 months, with virtually no buying and shipments on contract declining.

Buffalo—One Buffalo mill has bought 150 tons of No. 1 heavy melting steel, all railroad scrap, during the past week, paying $9.50. Despite dearth of orders, dealers have considerable difficulty laying down for yard tonnage at prices which might yield a profit.

Detroit—An unchanged local scrap market results from the closeness with which dealers are holding material for higher prices. Local scrap production has dwindled recently to a balance with steelworks consumption.

St. Louis—Reduction of $1 per ton on borings and turnings is the only change in the situation in steel and iron scrap. The market is quiet and little buying is being done.

Birmingham, Ala.—Steel and iron scrap is dull and melters are taking only absolute requirements. Prices are weak in face of ample supplies.

Toronto, Ont.—Trading in iron and steel scrap has slowed down with sales below the average for the past month or two. Foundries, however, are taking cast scrap as demands dictate and about 200 tons was sold within the past few days.

Warehouse

Warehouse Prices, Page 56

Cleveland—The volume of warehouse tonnage last week here was slightly less than in the week preceding. For the month little change is noted from July.

Chicago—Sales show little variation since a month ago although most changes noted are for the better. Business is practically on a par with the volume a year ago.

Boston — Warehouse volume is slightly ahead of last month, but the improvement has been slight, due to a gain in small orders. Black sheets are down $1 a ton.

Philadelphia—August will show a decline for most jobbers.

New York—Warehouse volume this month has been above expectations with some jobbers, several noting a gain of nearly 20 per cent over last month, well distributed.

Buffalo—The market for warehouse products has continued good, the only finished material situation that is bright. Sales have been comparatively heavy and for all commodities.

Detroit—Slight declines in warehouse shipments set in last week. With steel mills reporting numerous direct sales of one to five-ton lots inroads on the warehouse trade have been obvious.

Cincinnati—An upturn in demand for steel from warehouse is believed imminent, inquiries from industrial sources giving basis for this outlook. Prices are unchanged.

St. Louis—Wire nails from store show weakness and general trade is slow. Sales of bale ties have been fairly good.

Metallurgical Coke

Coke Prices, Page 53

Small orders for foundry coke reflect an unchanged market quoted at $4.60, Connellsville ovens, for common cupola grades and $5.10 for premium, although some premium coke is going at $5.35 a ton, Connellsville ovens. The market of $3.60 for furnace coke contracts holds, as does the spot market at $3.85. Thompson Connellsville Coke Co., near Republic, Pa., last week fired beehive coke ovens at its Thompson No. 2 plant, which had been idle since April. Operations are being scheduled on a five-day week, with other ovens expected to be added.

Cleveland and Chicago coke sellers find foundry coke shipments maintaining a level about 20 per cent above July. September prices have not been announced. At Cincinnati shipments of by-product foundry coke are declining. Production is being curtailed by ovens at Birmingham, Ala.

Nonferrous Metals

Nonferrous Metal Prices, Page 54, 55

New York—Development of easiness in zinc and lead was the principal feature of the nonferrous metal markets this week. Tin and export copper also weakened. Demand for all metals was restricted.

Copper—Sales after Monday fell

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off to an average of less than 100 tons daily in the domestic market. More activity is expected by producers since customers will likely place metal for requirements on which they are not covered at present. Feeling in the copper trade is that a rise in price would not be surprising should demand develop in moderate volume. Domestic prices hold unchanged on the basis of 9.00c, Connecticut.

Zinc—Easiness developed in zinc Tuesday after sales figures were reported for the preceding week showing that about 4000 tons had been moved. Some sellers cut prices in an effort to stimulate business but it failed to bring out much consumer interest. Prices fell to 4.25c, East St. Louis, by the end of the week.

Lead—Fair business was done in lead during the early part of the week but subsided later in the period to carlot quantities and less. Following publication of July statistics which showed an increase in stocks, prices eased off to a basis of 3.55c, East St. Louis.

Tin—Straits broke through the 52-cent level last week as a reflection of easiness in London and a slight strengthening in the position of the dollar. Trading was dull with consumers showing slight interest. Spot Straits was quoted toward the end of the week at 51.95c, New York.

Aluminum—Market was slow and prices unchanged.

Antimony—Prices held steady at 8.62½c, New York, throughout the week. Only small-lot trading was done in a dull market.

Cold Finished

Cold Finished Prices, Page 53

Pittsburgh.—Base price of 2.10c, Pittsburgh, has been reaffirmed for fourth quarter on carbon cold-finished bars and 2.95c, Pittsburgh, for alloy quality cold-finished steel. The market, however, is dull and consumers are not testing even the smallest size price bracket. There is only fill-in buying from the automotive trade and no quantity purchases from that source in prospect.

Semifinished

Semifinished Prices, Page 53

Prices of sheet bars at $28, Pittsburgh, and billets at $27, Pittsburgh, have been announced as effective for the fourth quarter. Formal filing of these prices was made last week by producers. Likewise, prices of tube rounds have been extended over the balance of the year at 1.80c and skelp at 1.70c. Little demand is noted for semifinished steels.

Ferroalloys

Ferroalloy Prices, Page 54

Ferromanganese shipments remain light, in line with the present reduced rate of steelmaking operations. Prices are $85, duty paid, Atlantic and Gulf ports. Domestic spiegeleisen, 19 to 21 per cent, is $26, furnace, on lots up to 50 tons, and $24 on 50 tons and over.

Coke By-Products

Coke By-Product Prices, Page 53

New York—Distillate prices are firm. Little spot material is available and the bulk of output is against contracts. Demand for toluol is holding better than usual for this period, due to a continued buying by lacquer makers. Naphthalene is dull, but contracting is expected about Oct. 1. Sulphate of ammonia contracting is active following price announcements for next season.

Pacific Coast

Pacific Coast Prices, Page 53, 54, 56

San Francisco—*(By Air Mail)*—Demand for steel products has fallen off, with the reinforcing bar and structural steel markets the most active.

Standard Oil Co., San Francisco, has placed with two unnamed eastern makers, 2500 tons of 10 and 12-inch pipe for part of a line from the San Joaquin valley to the marine terminal at San Luis Obispo, Calif., 108 miles. If new pipe were to be purchased for the entire line it would require 14,256 tons, as reported in STEEL Aug. 13. However, the company will lay most of it with used pipe.

In connection with the same line, the Standard company has just opened bids on twelve 134,000-barrel tanks, the largest tank inquiry here since 1929. From 2500 to 5000 tons of plates will be needed, depending upon whether the company decides to use new steel or to raze a number of 55,000-barrel tanks and use the material.

Pacific Coast Steel Corp. took 210 tons of steel sheet piling for the M street bridge, Sacramento, Calif. Bids have been opened on 750 tons of shapes and rails for crane runways for Boulder dam, Boulder City, Nev. Bids have also been taken on 205 tons for piers 38 and 40, San Francisco, and on 149 tons for a state bridge in Lincoln county, Colorado. Valley dam near Ogden, Utah, involving 341 tons of steel pipe for a penstock, 237 tons of steel sheet piling and 240 tons of reinforcing bars.

Southern Pipe & Casing Co. took 290 tons of 22-inch welded steel pipe

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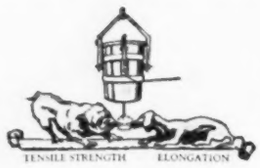


from 1 lb. to 30,000 lbs.
STRONG STEEL FOUNDRY CO.
BUFFALO, N. Y.

for Los Angeles. La Mesa, Calif., divided 125 tons of 24-inch welded pipe between the same company and the Consolidated Steel Corp.

Steel Awards Heavy

Seattle—More than 20,000 tons of steel was awarded in the Pacific Northwest in the past week. Pacific Coast Steel Corp. took 12,128 tons of reinforcing bars for the Bonneville power house substructure and dam lock, awarded by General Construction Co., Seattle, and J. F. Shea, joint general contractors. All of the 5100 tons of bars for the five Oregon coast bridges has been placed with Portland jobbers, as follows: Alsea span, 1000 tons; Coos Bay, 1804 tons; Yaquina, 1125 tons; Umpqua river, 650 tons and Siuslaw river, 525 tons.

The general contractors for Bonneville dam have also awarded 2500 tons of shapes to the Pacific Car & Foundry Co., Seattle. For a state bridge in Yakima county, Washington, Elliott & Co., Seattle, general contractors, have placed 270 tons of structurals with the Virginia Bridge & Iron Co., Richmond, Va.

Queen City Construction Co., Seattle, at $70,542, and Joe Coluccio, 1425 Hanford street, Seattle, at $33,348, were low for two units of a water system at Chehalis, Wash., involving 870 tons of 4, 6, 8 and 14-inch cast iron pipe.

Simmons Co. of California, with a rail steel reinforcing bar mill in San Francisco, booked 750 tons of bars for a wharf and transit shed at Stockton, Calif.

L. E. Reynoldson, city clerk, Skagway, Alaska, will receive bids Aug. 27 for construction of a water system. Eureka, Mont., will take tenders Sept. 4 for reconstructing its water plant, involving 19,000 feet of 4, 6 and 8-inch pipe. Plans are by R. J. Hale, engineer, Missoula, Mont.

Steel in Europe

Foreign Steel Prices, Page 56

London—(*By Radio*)—Quiet prevails in most steel and iron markets of Great Britain, though a favorable outlook for fall business sustains production rates and firmness of prices. Export demand shows signs of increasing, and British firms have booked some substantial orders for rolling stock for South Africa. Export inquiry for tin plate is expanding and prices are stronger.

The Continent reports markets are seasonally slow, but the Far East is showing activity. Works in general are fairly well booked.

Equipment

Pittsburgh—Contracts for both the National Steel Corp. and Carnegie Steel Co. strip mills are still pending, with seven bidders interested in the business. Changes in mill and building designs are holding up definite awards. United Engineering & Foundry Co. has been awarded contract for an 84-inch strip cold mill by the Ford Motor Co., involving expenditure of $400,000. The mill, to be built in Youngstown, O., will produce wide cold-rolled strip up to 78 inches in width and will be a single-stand reversing 4-high unit, used to cold roll strip produced by the wide continuous mill now under construction by United Engineering for Ford. It will be installed in Ford's Dearborn, Mich., plant.

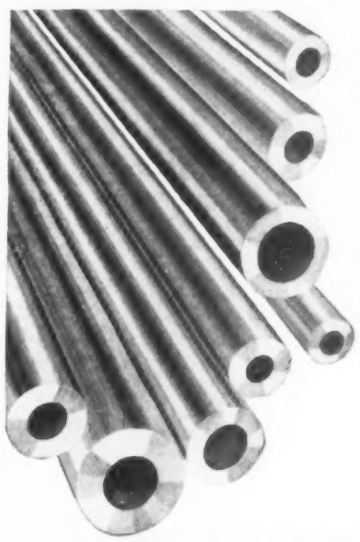
Cleveland—Ford Motor Co. has let contract for a second 110,000-kilowatt turbogenerator for installation in its power generating station at the Dearborn, Mich., plant, in connection with a $5,500,000 expansion in power facilities. General Electric Co. will build the unit which will require a year for construction and shipment. It is to be a vertical compound unit operating at 1200 pounds steam pressure and 900 degrees Fahr. A 15,000-kilowatt noncondensing turbine also will be installed in the same station, as well as a high-pressure boiler and auxiliary equipment. Expansion of the pressed steel department of Fisher Body Cleveland division of General Motors Corp. will involve installation of several large triple-acting presses.

Chicago—Equipment markets continue slow in most instances with increased hesitancy noted in closing on inquiries. Summer months ordinarily are dull, however, and there is some hope that September will witness improvement over recent volumes.

Boston—Operating schedules at most New England machine building plants are curtailed rather sharply due to lack of orders. As a result employment in this field has dropped.

New York—Except for figuring several hundred tools for two New York city technical schools, machinery dealers and builders note little new inquiry. Purchases by private industrial plants are light, but not entirely halted as most sellers book a few machines from time to time, generally one or two units per order.

Washington—While no official announcement has been made, it is understood on good authority that the army asked for and received a PWA grant amounting to $2,300,000 for the purchase of machine tools and shop equipment. No date has been set for opening bids for this equipment but it is said in well-informed circles that bids probably will be requested within the next month or two. The navy department asked PWA for some $3,000,000 for new machine tools for its yards and docks and has been turned down in its request at least for the present time.



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Construction and Enterprise

New England

QUINCY, MASS.—City will take bids soon for a 200,000-gallon elevated steel storage tank on Penn's hill and 150,000-gallon tank on Breakneck hill. Cost is estimated at about $50,000.

WORCESTER, MASS.—City, sewerage department, L. W. West, city hall, engineer, has plans for a sewage disposal plant addition and an 18 x 22-foot pump house and appurtenances, to cost about $55,000.

NEWTON, MASS.—United States Automatic Box Machinery Co. Inc. has been formed by N. H. Taylor, Newton Center, Mass., and associates, to manufacture machinery for the manufacture of boxes and cartons.

PORTLAND, ME.—Colonial Beacon Oil Co., 30 Beacham street, Everett, Mass., will take bids soon on a bulk plant, including tanks and pipe lines, to cost about $40,000.

PROVIDENCE, R. I.—City will take bids about Sept. 1 for a sewage disposal plant to cost about $475,000. J. F. Nolan is city engineer.

New York

AUBURN, N. Y.—City plans construction of a power plant to cost about $310,000 for which PWA loan has been approved. J. Tihan is city engineer. Burns & McDonnell Engineering Co., 107 West Linwood boulevard, Kansas City, Mo., is engineer.

CAMDEN, N. Y.—Camden Wire Co. plant here recently was damaged by fire, including stock and machinery.

CANTON, N. Y.—City plans construction of a sewage treatment plant to cost about $50,000 for which PWA financing has been approved. W. T. Fields, Watertown, N. Y., is engineer.

EDEN, N. Y.—City plans a waterworks system to cost about $73,000, for which PWA financing has been arranged. Fretts, Tallmy & Senior, 5488 Main street, Williamsville, N. Y., are engineers.

ELMIRA HEIGHTS, N. Y.—City plans construction of a sewage disposal plant to cost about $488,000. S. P. Hevenor, 245 Melrose street, Rochester, N. Y., is engineer.

NEW YORK—PWA has allotted loan of $1,868,000 to New York City for construction of two sewage treatment plants and an outfall sewer in vicinity of Coney Island; $1,013,000 for improvements to waterworks system, and $1,282,000 for improvement on pier 45 at foot of West Twenty-first street.

New Jersey

BAYONNE, N. J.—City commissioners plan a waterworks to cost about $600,000. PWA loan has been approved. W. L. Clarkson is city engineer.

CAPE MAY, N. J.—City will take bids soon on financing a 700,000-gallon elevated steel storage tank, to cost about $47,000 for which PWA loan has been allowed. Vosburg & Goff, 509 Cooper street, Camden, N. J., is engineer.

PHILLIPSBURG, N. J.—J. T. Baker Chemical Co. is taking bids on a boiler plant to cost about $50,000. J. G. Berger, 24 Commerce street, Newark, N. J., is engineer.

Pennsylvania

BRISTOL, PA.—Fleetwings Inc., Roosevelt Field, Garden City, N. Y., has bought the former plant of the Keystone Aircraft Corp. here, and will equip for manufacture of airplanes and parts, of stainless steel.

CORAOPOLIS, PA.—City plans construction of an electric light plant. P. F. Loftus, Oliver building, Pittsburgh, is engineer.

HARMARVILLE, PA.—Gulf Refining Co., Frick annex, Pittsburgh, will build three laboratories here consisting of two 3-story structures and one single-story building. All the company's research work will be concentrated at this division. General contract has been let to W. T. Grange, Keenan building, Pittsburgh.

PHILADELPHIA.—Quaker Metal Products Co., 2234 North Twenty-eighth street, has leased a plant at 814 South street for the manufacture of metal products.

Ohio

ASHLEY, O.—Village has received loan of $49,000 for waterworks.

CLEVELAND—Fisher Body Co., Lincoln R. Scaife, general manager, 140th street and Coit road, awarded contract to J. A. Utley, 729 Penobscot building, Detroit, for steel and brick addition 139 x 290 feet. Large triple-action presses will be installed. Is part of $3,000,000 improvement program in several plants. (Noted July 30.)

CLEVELAND—City Ice & Fuel Co. in carrying out its expansion plans has gone into the business of manufacturing domestic and commercial refrigerators and air conditioning apparatus. It purchased the large manufacturing properties of the Rich Illinois Refrigerator Co., Morrison, Ill., through its newly-formed subsidiary, Ice Cooling Appliance Corp., where facilities are large enough to turn out 50,000 units annually.

HICKSVILLE, O.—Village has been granted $60,000 loan for construction of sewage treatment plant.

HOLLAND, O.—City plans waterworks, including two 75-gallons-per-minute turbine or vertical centrifugal well pumps, with motors, and 100,000-gallon steel tank, to cost about $35,000. S. Champe & Associates, Nicholas building, Toledo, O., are engineers.

Michigan

DETROIT—Sevaerg Metals Corp., 915 Harper avenue, has been incorporated to deal in iron and steel, by Kenneth R. Gregory, 2033 Dime Bank building.

DETROIT—National Cooperage Works Inc., 2125 Mack avenue, has been incorporated with capital of 250,000 shares, no par value, to manufacture barrels.

DETROIT—Joseph Stringham, 2700 East Jefferson avenue, city engineer, is preparing plans for an additional pumping unit for the Connors Creek pumping station to cost approximately $65,000.

DETROIT—Detroit's $1,400,000 incinerator plant project has been forwarded by approval of the Wayne county board of supervisors to county PWA officials for action. The board also approved the application by the county to PWA for funds to construct a $23,000,000 sewage disposal plant to serve Detroit and adjacent communities.

JACKSON, MICH.—Consumers Power Co., Jackson, will erect an 85-foot steel tower in Lansing, Mich.

LAPEER, MICH.—Oviatt Machine Products Co., under direction of D. W. Oviatt, has leased factory building on Howard street and will manufacture machine parts and special tools.

PONTIAC, MICH.—Pontiac Mfg. Co., 424 Ferry street, has been incorporated to manufacture automobile parts, by Hugh Chalmers Jr., 103 South Alter road, Detroit.

Indiana

COLUMBUS, IND.—Cummins Engine Co. has awarded contract to Dunlap & Co., Columbus, Ind., for erection of an

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addition to its plant. Diesel-electric locomotives will be manufactured in the addition.

INDIANAPOLIS. — Automatic Saw Sharpening Co. Inc., 735 East Ohio street, has been formed by John W. Dixon and associates to manufacture grinders and saw and knife sharpeners.

Illinois

CHICAGO—Fritzmore Grinding Co. Inc., 2221 South Wabash avenue, has been incorporated by M. Moore, Richard L. Peters, and Margie Dickbrader, to operate a general machine shop. Correspondent: Thomas B. Maddoce, 11 South LaSalle street.

CHICAGO—Frank B. Lomax Co. Inc., 365 West Oak street, has been incorporated by William L. Lomax, M. J. Lyman and Edward Gimbel, to manufacture machinery, tools and equipment. Correspondent: Teller, Levit, Silvertrust & Levi, 1 North LaSalle street.

NAPERVILLE, ILL. — City plans alterations and additions to the municipal electric power plant, including two 500-horsepower diesel engines, to cost about $80,000. Allen & Vogtborg, 205 West Wacker drive, Chicago, are engineers.

SPRINGFIELD, ILL.—Electrodraulic Co. of Springfield, 406 First National Bank building, has been incorporated by Ralph W. Turnbull, Lloyd L. Costley and Evan Howell, to manufacture, assemble and sell machinery, and automotive equipment. Correspondent: Evan Howell, 406 First National Bank building, Springfield, Ill.

District of Columbia

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids Aug. 31, schedule 3155, one motor-driven, high-speed vertical milling machine, delivery Brooklyn, N. Y.; schedule 3162, two universal and tool grinders, delivery Washington; Sept. 4, schedule 3156, two combination vertical and horizontal spindle milling machines, delivery Washington.

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids Sept. 4, schedule 3169, one motor-driven double housing planer, delivery Washington; schedule 3175, one motor-driven metal planer, delivery Washington; schedule 3176, two motor-driven double housing planers, delivery Washington; schedule 3178, three hydraulic presses, delivery Newport, R. I.; schedule 3181, one motor-driven milling machine and spare parts, delivery Norfolk, Va., schedule 3186, two motor-driven boring mills, delivery Washington; Sept. 7, schedule 3171, two metal planers, delivery Washington.

Florida

DUNNELLON, FLA.—Dr. F. A. Northern has acquired Florida Fertilizer and Milling building and will install machinery for producton of phosphatic clay for use in fertilizers.

MIAMI, FLA.—Florida Cane Products Corp., William C. Chadwick, vice president, care of Tavern Equipment Corp., 136 North East First street, is planning erecting a distillery plant and storage warehouse, including bottling plant.

PENSACOLA, FLA.—City has $239,918 allotment for waterworks and sewage system; will have plans and specifications ready for bids about Sept. 1.

Georgia

CORNELIA, GA.—PWA has allocated $90,000 for waterworks project, consisting of complete filtration plant of 500,000-gallon daily capacity, and a 200,000-gallon standpipe and a 10-inch supply main from the filter plant to the standpipe and some water main extensions in the city. Contracts probably will be let in 60 to 90 days. Robert & Co. Inc., engineer, Atlanta, Ga.

Kentucky

LOUISVILLE, KY.—Porcelain Metals Corp., a consolidation of Louisville Enameled Products Co. and Wabash Sani Tray Co., has been incorporated with capital of $126,000, by P. B. McBride and Robert F. Vaughan.

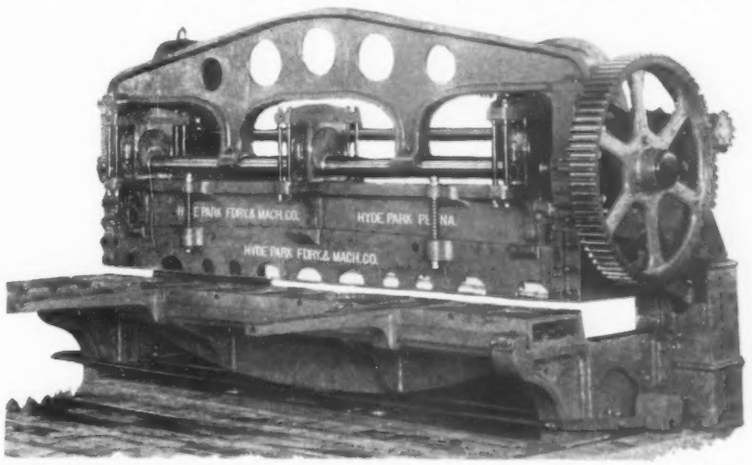
BARBOURVILLE, KY. — Kentucky-West Virginia Utilities Co. is planning to construct a filtration plant to cost about $30,000.

Louisiana

NEW ORLEANS—Whitney Bank, St. Charles and Gravier street, will open bids Sept. 19 on air conditioning equipment, refrigerating, duct work, control, etc., cooling tower and condenser water

A SCOOP

7 SHEARS AS ILLUSTRATED—DIRECT MOTOR DRIVE



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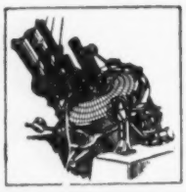

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Maryland

BALTIMORE. — Winand-Pikesville Distillery Co., 1920 Belair road, plans to alter and enlarge its distillery at an estimated cost of $100,000.

BALTIMORE.—United States Industrial Alcohol Co., Curtis Bay, is receiving bids for alterations to its factory here. Estimated cost $150,000.

BALTIMORE — Brohmeyer Brewing Co., 34 Central Savings Bank building, has been incorporated by Charles Brohmeyer and R. Walter Crothers.

BALTIMORE—Majestic Distilling Co. Inc., 10 East Lombard street, has been incorporated by Charles J. Levy and Louis A. Pacetti, Munsey building.

BALTIMORE—Crown Cork & Seal Co., 4401 Eastern avenue, will receive bids Sept. 1 for plant alterations to cost approximately $30,000. Lucius R. White Jr., architect, 10 West Chase street.

North Carolina

DURHAM, N. C.—City plans applying for additional allotment of $85,000 for constructing Ellerbee creek sewage disposal plant. W. M. Piatt, city consulting engineer. Total cost of project is $760,000.

South Carolina

GREENVILLE, S. C.—A. M. Rickman, Greenville county relief administrator, and Herbert A. Theodore, counsel for FERA in Columbia, have leased building formerly occupied by St. Johns Mfg. Co., which will be remodeled and machinery installed for canning plant.

Tennessee

ASHLAND CITY, TENN.—City, S. A. Marable, mayor, rejected previous bids for waterworks system and will receive additional bids, to be opened Aug. 31. Work includes elevated storage tank of 100,000-gallon capacity.

CAMDEN, TENN.—City plans waterworks; has loan of $46,000. J. A. Switzer, engineer, Engineering building, Knoxville, Tenn.

West Virginia

BELLE, W. VA.—E. I. Dupont de Nemours & Co. Inc., Wilmington, Del., is building a plant at this point, near Charleston, W. Va., for the manufacture of agricultural products.

NEW CUMBERLAND, W. VA.—Cronin China Co., Daniel Cronin, president, plans to purchase the two idle factories of the former Owen China Co., Minerva, O., and will rehabilitate them, construct new tunnel kiln and make other improvements. Estimated cost $30,000.

Virginia

RICHMOND, VA.—Virginia emergency relief administration has acquired old Forbes Packing Co. plant on Hermitage road and will remodel and install machinery for processing of cattle.

Missouri

INDEPENDENCE, MO.—City, R. F. Sermon, mayor, will take bids soon for a municipal electric light and power plant and equipment, to cost about $187,000, for which PWA funds have been alloted. Black & Veatch, 700 Mutual building, Kansas City, Mo., are engineers.

MAPLEWOOD, MO.—Alco Valve Co. Inc., John L. Schrode, 2628 Big Bend boulevard, has let contract to Charles P. Grady & Co., 111 North Tenth street, for factory alteration and additions to factory, to cost about $14,000.

ST. LOUIS—Lander Co., division of Carlova Inc., Binghamton, N. Y., manufacturer of cosmetics, plans establishing plant on southeast corner of Adelaide and McKissock avenues, and will install machinery. Rolfe M. Parsons will be in charge of plant.

Oklahoma

CUSHING, OKLA.—City has plans and will take bids soon, probably in September, for a municipal electric light and power plant, including diesel engine, 2250 horsepower, and distribution system, to cost about $350,000. PWA loan has been approved. W. R. Holway, 302 East Eighteenth street, Tulsa, Okla., is engineer.

Texas

GOOSE CREEK, TEX.—City, C. R. Myers, mayor, is considering construction of electric light and power plant. Inland Engineering Co. is preparing data on cost of plant.

Wisconsin

JANESVILLE, WIS.—Chevrolet Motor Co. has let contract to T. S. Willis, 326 Hayes building, Janesville, for construction of a foundry addition and remodeling.

LACROSSE, WIS.—George Kunz Brewing Co., Theodore J. Molzahn, president, plans construction of new bottling house, installation of new automatic bottling machinery and other equipment, to cost $40,000.

MARSHFIELD, WIS.—R. Connor Co. is planning erection of sawmill at Connorville, near Wakefield, Mich. No estimates of size or cost are available.

MILWAUKEE—United States superintendent of lighthouses, 432 Federal building, has let contract for furnishing nine diesel engine generating plants to Fairbanks, Morse & Co., Chicago, at $10,743.

OSHKOSH, WIS.—Corrugated Box Co., manufacturer of shipping containers, rolls and sheets, has broken ground for a 2-story fireproof excelsior-cutting building, 92 x 100 feet, replacing two old buildings and increasing floor space about 50 per cent. John Orlebeke is president.

STOUGHTON, WIS.—Bids will be asked soon for equipment for an electric light and power plant, including new generating units and accessories and new standby unit. A fund of $125,000 is ready. W. G. Kirchhoffer, 22 North Carroll street, Madison, Wis., is consulting engineer.

Minnesota

MANKATO, MINN.—Northwest Hemp Corp. is building a 2-story, 40 x 70-foot hemp factory on Mound avenue near the river.

NORTH MANKATO, MINN.—Plans are under way for a municipal light and power plant, including distributing system and power station. E. M. Charles is city clerk. G. M. Orr & Co., 408 Baker building, Minneapolis, is engineer.

South Dakota

ROCHFORD, S. DAK.—King of the West Mining Co., Lead, S. Dak., J. L. Curran, president, plans construction of a 50-ton capacity per day gold mill.

Iowa

GLIDDEN, IOWA—City has voted to construct a municipal electric light and power plant to cost about $47,000.

Nebraska

COLERIDGE, NEBR.—C. E. Gallagher, village clerk, will receive bids until Aug. 31 for improvements to municipal waterworks system, including 50,000-gallon steel tank on 60-foot tower. H. H. Henningson, Union State Bank building, Omaha, Nebr., is engineer.

Montana

FAIRVIEW, MONT. — City plans waterworks construction, including pumping equipment, a 100,000-gallon elevated steel tank, pipe and hydrants. R. N. Stewart, Miles City, Mont., is engineer.

Arizona

DOUGLAS, ARIZ. — Texas Canyon Tungsten Co., in Texas Canyon, Douglas, Ariz., backed by Frank U. Armstrong and associates, Douglas, is installing new equipment.

Pacific Coast

SAN FRANCISCO.—Standard Oil Co. of California, 225 Bush street, San Francisco, plans a 108-mile, 12-inch steel pipe line in Kern county to Estes Bay and 25 pumping plants.

SAN FRANCISCO.—National Motor Bearing Co., 470 Natoma street, has acquired the plant formerly occupied by the Pacific coast division of the Victor-R.C.A. Corp. in Oakland, Calif. Production of oil and fluid seals will be started in the new location about Oct. 1. Facilities will be much expanded in the new location. A. S. Johnson is president.

COULEE CITY, WASH.—O. H. Kammeyer is building a $30,000 ice manufacturing and cold storage plant, 40 x 74 feet.

Dominion of Canada

KITCHENER, ONT.—Superior Tinning & Retinning Co., manufacturing ice cream containers and restaurant equipment, has removed its plant here from Windsor, Ont.

FORT ERIE, ONT.—Waco Aircraft Co., Troy, O., is establishing an assembly plant here.

TORONTO, ONT.—Canadian Radiator Mfg. Co., affiliated with the Auto Radiator Mfg. Co., Chicago, has established a plant at 196 Richmond street, West.

TORONTO, ONT.—Liquid Carbonic Corp., 41 Mill street, plans construction of plant for manufacture of carbon dioxide and dry ice, at a cost of about $50,000.

WELLAND, ONT.—Canada Foundries & Forgings Ltd. recently sustained damage by fire to its plant.

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